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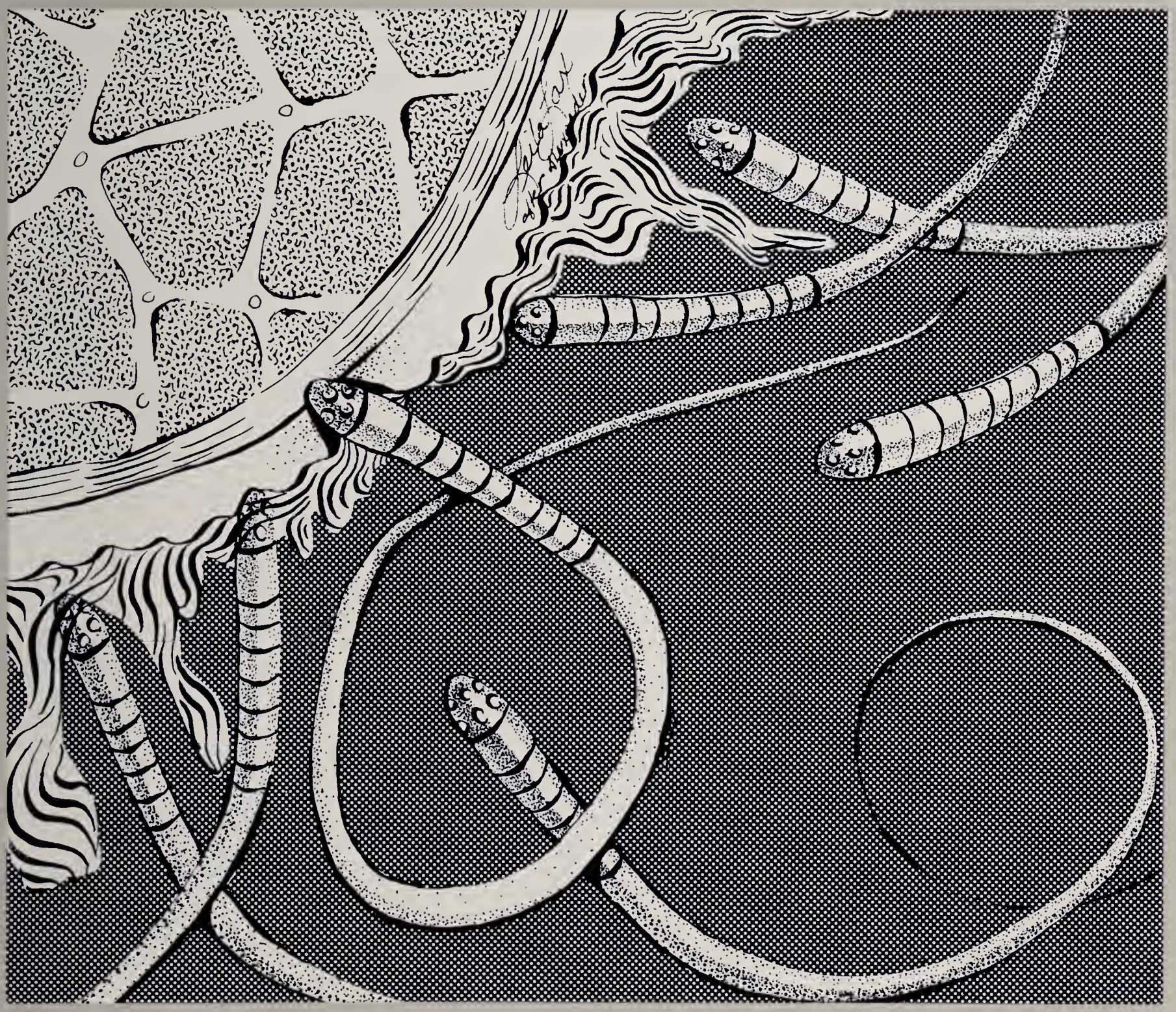
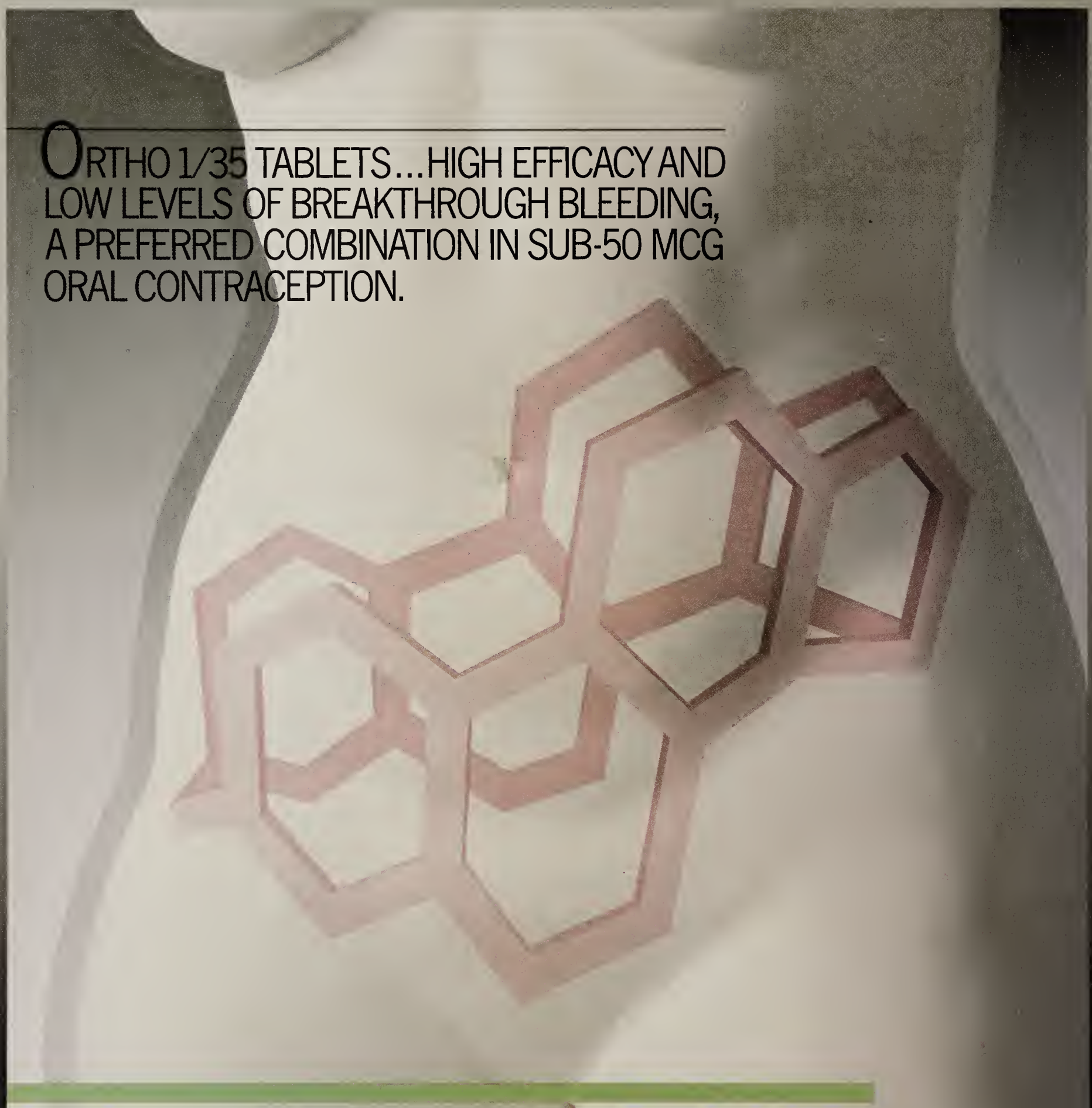


In this issue:

Instruction in Human Sexuality at the University of Toronto
by Dr. David Shaul

Sex and Fantasy
by Jack Pollock



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GUIDELINES FOR PUBLICATION

1) All articles intended for publication should be submitted to the editors before the deadline which is usually six weeks before the release of the Journal.
2) Submitted articles should be typed double-spaced, single sided on paper 8½"x11" (letter size) and they should not be more than 15 to 20 pages (3000 to 4000 words).
3) Illustrations, graphs, diagrams and figures should be put on a separate sheet and identified by Arabic numerals. A list of explanatory legends for all the figures and diagrams should be put on another sheet. Do not write on the back of photographs.
4) References should be checked with the original sources, designated by raised Arabic numerals in the text, and listed in alphabetical order on a separate sheet. Each periodical reference should include in order: the author's last name and initials, title of the article, journal name, volume number, page number, and year (e.g. Risser JC: Scoliosis: Past and Present. *J. Bone and Joint Surg* 46A:167, 1964). For further information please consult the MLA Stylesheet.
5) The editors reserve the right to make such editorial changes as are deemed necessary to ensure correctness of grammar and spelling, clarification of statement and conformity to Journal style.
6) Acceptance for publication is subject to the understanding that such material is submitted solely to the Journal and will not be reprinted without the consent of both the editors and author.

EDITOR'S MESSAGE

Practicing Preventive Sexuality

This issue of the Medical Journal is devoted to the topic of human sexuality. Last October, after attending Dr. David Shaul's lecture on sexual counselling, I was approached by Harley Hahn. He commented that: "Compared to all the sex therapies we're exposed to — whether it's PLISSIT or intensive group therapy — nothing would be more beneficial than to show people how to do it with someone nice whom they like". "If people knew how to do it with someone nice whom they like", I argued, "then there wouldn't be any need for PLISSIT or intensive group therapy".

The topic of human sexuality, like any other in medicine, can be approached from a preventive perspective. If people can be taught from an early age how to cultivate gratifying sexual relationships, then they wouldn't be coming to their family physicians after 25 years of unhappy marriage, bewildered and dismayed at how empty their sex lives were.

The importance of confronting our social and sexual values as future physicians is no doubt familiar to everyone, however, the point must be stressed that proper education of the patient begins with the physician's own introspection and self-evaluation. This is well demonstrated by the successful elective in human sexuality which was introduced this year by Jodi Lofchy and Shane MacKay, both third year students. In terms of preventive sexuality, what they are doing is probably more timely and valuable than anyone realizes.

In this issue of the Medical Journal you will have a chance to read a short article by Dr. David Shaul outlining some of the difficulties encountered in introducing and supervising formal instruction in human sexuality at the undergraduate level.

The approach is multidisciplinary because problems in human sexuality permeate every facet of medicine, not just urology and gynecology. General practitioners are constantly dealing with their patient's marital problems, many of which revolve around sexual performance. Even neurosurgeons must explain to the spinal cord injury victim that sex still exists following their accident, and that "orgasm" and even parenting are still possible with a high cervical cord injury.

The central issue in human sexuality is the nature and importance of intimacy. Not only physical intimacy, but emotional and psychological intimacy as well, since all three play a role in the fullness of sexual relationships. In an article with a deceptively simple title, Harley Hahn, discusses these issues and offers practical suggestions, both for the short term and for the long term.

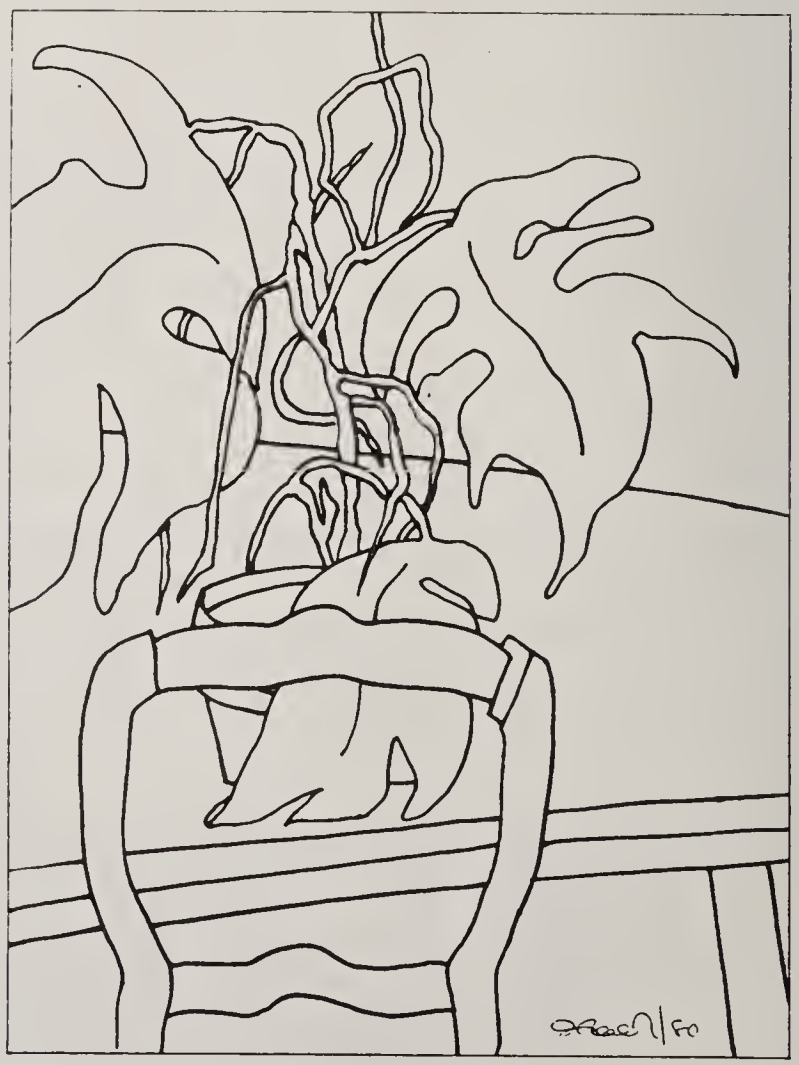
Of course there's more to good relationships than good first impressions. But the answer to the question "What psychological, social, and cultural factors are necessary to maintain healthy long-term relationships?" will always elude psychiatrists, social scientists, and the National Enquirer. Suffice it to say that it is enough to be aware of the problem and to address the issue with sincerity, since we each must establish normative values for interpreting the social and sexual behaviour of other human beings — especially patients.

This, essentially, is what Toronto artist Jack Pollock is compelling us to do when he writes about the need to broaden the narrow sexual roles handed down to us by society, and incorporate fantasy and imagination into the act of procreation. Whether it's buying a book and leaving it around the house, or giving someone an unusual gift, the need to create and to procreate at the same time can be fulfilled in a manner that is both tasteful and acceptable to all persons involved.

This again raises the question of our own sexual range as medical students. The only comment here is that the situation is not made any easier by the long years of dedication and preparation that precede the *entry* into medical school, let alone its completion. Many of us emerge somewhat socially blunted. The need to fill the gap is very real because the attitudes we form ultimately reflect upon the patients we treat.

We owe it to such patients and to ourselves to approach matters sexual with the widest range of knowledge and experience, devoid of any judgement or condemning criticism. Only then will we be able to give sound counsel and to instruct others in the preventive aspects of human sexuality.

Michael Dan
Editor



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GUEST ARTICLE

Instruction in Human Sexuality at the University of Toronto Faculty of Medicine: an Informal Overview

David L. Shaul, M.D.*

I recall vividly a film which was being shown to students about fifteen years ago. The scene was a plush office of a middle aged and very successful physician. This was attested to by the usual props, such as a leather inlaid mahogany desk, sitting on thick rich broadloom. The smell of leather, the gleam of brass, and the hushed dignity of drapes and subdued hangings is everywhere. The doctor is well dressed and with graying temples. The patient, a woman in her forties, dares to complain that her sex life is not as good as she would like it to be. A look of horror appears on the doctor's face and his reaction is predictable: "We do not discuss such things in my office, and at your age, sex is almost over anyway, so why worry?" An effective closure, to what has proven to be a difficult and embarassing subject to physicians these many years.

How has this extremely important subject been dealt with in our faculty? The departments that pioneered this work, included Behavioural Sciences, Community Medicine, Endocrinology, Urology, Social Services, Psychiatry, Obstetrics and Gynecology, and Family Practice. The methods used included lectures and seminars both to undergraduate and graduate students. Audiovisual material was available, but there was very little clinical exposure. The immediate problem, as I saw it in 1975, was a lack of coordination. One faculty did not know what the other one was teaching. With the support of various deans and department chairpersons, I became familiar with these various programs. To be most effective they had to be brought together.

A core group of dedicated volunteers spreading across the various faculties was formed, and meetings were called to develop a comprehensive course in human sexuality. Subject supervisors and coordinators of all four clinical years were consulted. There was an immediate and enthusiastic response at all levels. This work spanned about two calendar years and was ready for presentation to the Undergraduate Curriculum Committee in April 1979.

I had submitted a formal presentation in writing to this group, in advance of the meeting. It included the course as I saw it, and the course that our core group had developed. We outlined four aims which we felt answered the curriculum needs:

1. To enhance the medical students' awareness and perception of their future patient's needs.
2. To highlight the need for medical students to come to terms with their own feelings.
3. To enable medical students, as graduate physicians, to assess and refer to a proper authority, without feelings of inadequacy or guilt.
4. To give an understanding of what sexual therapy is and how it works.

In order to keep within known parameters, we recommended basic sciences of human sexuality to be taught in the first year, history taking in the second year, and clinical teaching in third and fourth years. The theme of the course would be to raise the comfort index of both patient and physician alike, in matters of sexual difficulties.

The members of the Curriculum Committee had done their homework and a very comprehensive discussion was held. They announced that this program would be implemented and appointed myself as Topic Coordinator.

The universality of interest in this subject has already been well established. The Canadian Medical Association in cooperation with the Canadian Universities is looking at the various courses available. Hopefully, it will not only be able to confirm the value of teaching human sexuality, but will also act as a stimulus to strengthen the basis from which these courses are taught. It is significant that in a study being carried out by Lief and Cross in the U.S., the following question was asked of topic co-ordinators. If you were to leave your school, would your course in Human Sexuality continue? I answered that the course would probably not continue, and I am sure most other respondents would agree. The encouraging point is that this is being more widely recognized.

There has also been great interest from the media. Last year, I was invited to conduct a live phone-in program with the CBC called "Keeping in Touch". This was carried out weekly for thirteen weeks on the Metro Morning Show. I cannot stress enough the sincere interest shown by the public. Their anonymity via the radio only encouraged a greater range of questions. There were no disturbing or funny calls. A lot of parents called in with specific questions on how to give information to their children. People in the so-called older age groups formed a large portion of the audience.

The usual fears that I hear in my own office were dealt with: one widower in his late sixties, about to embark on a new marriage, was concerned about his ability to perform for his new wife whom he felt had greater sexual needs than himself. Another woman was concerned that her husband's

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ability to have intercourse had been changed after a prostatectomy. I found it interesting that she and her husband had never discussed sexual activities after surgery with the urologist. A nurse called to complain that patients with various visible deformities after cancer surgery had not been properly counselled and were having great difficulties in resuming a satisfactory sexual relationship. The various accents and methods of expression attested to the fact that anxiety about sex cuts across all levels of society.

The major daily newspapers and wire services call frequently for information to help them write articles on various aspects of sexuality. This area continues to grow, as does the range of subjects discussed. The reporters prepare their work well and the articles, I find, are excellent not only as sources of information, but as a forum to get us all thinking.

Now what of the students for whom all this was designed? Ken Doody of the Department of Psychology at Mount Sinai Hospital designed a questionnaire to measure responses to a series of movies and discussions, held as an optional session known as the "Saturday Morning Movies."

Sexually explicit movies regarding various sexual activities including heterosexuality, homosexuality, and masturbation were shown. Members of the faculty were in the audience and led small discussion groups after each group of films.

Table 1 shows the results of this study from 1979 to 1982. Comments were plentiful and I will share some of these with you:

Table I. Feedback Questionnaire, "Saturday Morning Movies", 1979-82 (n = 132)

1. Overall, how useful how today's films and discussions been?	
absolutely no value	0.8%
little use	4.5%
some use	37.1%
quite useful	45.5%
very useful	12.1%
2. Were there any ways that the films were helpful?	
yes, new information	10.3%
yes, helped me think about some issues	43.0%
yes, raised some of my own feelings	42.5%
yes, other (specify)	2.3%
no, they were no help	1.9%
3. Did any of the films seem to be erotically stimulating?	
yes	60.6%
no	30.3%
not answered	9.1%
4. Were the discussions useful?	
yes, provided new information	13.3%
yes, helped me clarify some feelings about human sexuality	63.6%
yes, other (specify)	17.5%
no, they were not useful	5.6%
5. Did any of the films make you feel uncomfortable?	
yes	59.1%
no	38.6%
not answered	2.3%
6. Did today's programme have any effect on your sexual feelings, comfort of knowledge?	
yes	63.6%
no	34.8%
not answered	1.5%

The above results represent only a portion of the total questions surveyed. Percentages indicate only raw responses and have not been statistically analysed.

"It made feel more accepting of homosexuality."

"The program added a bit of knowledge, re: lesbianism. It provided a certain sense of relief in the realization that according to the discussion group leader's criteria, I was well adjusted which I wasn't quite so sure of before."

"Would like more on sex in the handicapped."

"Wondered why none of the films showed the female superior position."

"Now I will have to question how I might deal with homosexual patients in regards to sex hangups."

"The elderly couple encounter seemed a little unreal. How many older couples are so fit or so willing to explore/experiment to the extent they did?"

"How old were the two in the geritol flick?" (For your information they were an unusual couple of good friends in their early sixties.)

"These films should be presented during the normal school hours and added to the Community Health Program. All medical students should be exposed to these films. The ones who need it the most probably did not show up..."

"More emphasis should be placed on the problems of sex: i.e. inhibitions people have. I believe that difficulties in a sexual relationship are more often the rule than the exception, and while it is good to present the positive side of sex, the realities should be presented."

"Too many students have unresolved sexual inhibitions, inexperience in close emotional relationships, and carry repressions and inhibitions which are in need of some 'relief'. This will greatly improve the calibre of M.D.'s and must be added to the Meds program."

"In the film on female homosexuality, all the running through heather did not contribute."

This academic year an elective was introduced, at the request of students. A committee of two approached me with a list of topics. They felt that smaller sessions would encourage more discussion. I immediately gave my approval which was confirmed enthusiastically by our faculty.

There are eighteen two hour sessions, given weekly from seven to nine in the evening. The spectrum of topics includes heterosexual and homosexual sex, transexuality, sex in the aged, sex in the handicapped, rape, abortion, birth control, sexual attitude restructuring, sex counselling, and much more. Since, at the time of publication, this elective will not yet be completed, a further report will follow elsewhere. However, at the halfway mark, it is already a popular and successful program.

What of future programs? Now that the undergraduate program has been properly launched, we are looking to develop a post-graduate program. I have had frequent requests, but so far, no course has been available. Negotiations are presently underway to correct this. A plan to open a clinic in human sexuality with residents in obstetrics and gynecology, supervised by our faculty, is being studied. When this is established, it could also have room for other residents, especially in family practice. The hope would be to span out beyond our Faculty of Medicine. My ultimate dream is a Division of Human Sexuality staffed by a multidisciplinary group of experts, where research, treatment, and teaching would combine to make more understanding and communicative professionals, teach students, and serve the public. Thereby fulfilling the purpose for which all of this was started: the raising of the comfort index of both client and professional alike.□

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SPECIAL ARTICLE

Sex and Fantasy

Jack Pollock

If the title of this article sounds titallating, a bit licentious, and perhaps bordering on the prurient, then that in itself justifies our look into a very real and ongoing problem. The centre of that problem deals with some of the basic needs of man: trust and fulfillment through sharing.

To a great number of people, the idea of fantasy together with sexual aids and role playing suggests a breakdown of social conventions, a loss of morality, and the dawning of a new age of decadence. It also suggests promiscuity rather than the desired goal of one-to-one relationships.

It is exactly this sort of reasoning that inhibits the free spirit, and creates in the place of ease and enjoyment, frustration, fear and in some cases violence. And when the fear of rejection deprives us of trust and experimentation, we are prone to seek anonymously what we should rightfully share intimately.

Therein lies the dilemma. Sexual services do not survive and *thrive* unless they fulfill specific needs. When we discover that our piece of plastic currency can be used to buy an orgasm (the so-called ultimate sexual climax), we suddenly realize that there is a great need for intimacy. We are forced to recognize the problems in maintaining close relationships.

Any physical or mental aids that help in the liberation of body and spirit must be viewed with respect and acceptance. But in a society in which a credit card can be used to pay for an erotic telephone conversation (without breaking any laws), it is obvious that we are not doing our homework. To achieve this acceptance, we must break the barriers of superimposed social behaviour with an understanding of our physical and spiritual needs.

Some of the strongest elements in these imposed life patterns are based on interpretations of religious dogma. The missionary position is more than a punch line to a joke. We seldom allow our senses to embroider the act of procreation. Masturbation is tolerated only until the *real thing* comes along. All of this, compounded by the need for belonging to a peer group, further alienates the individual from his or her unique qualities as a thinking, feeling human.

The marriage vows — love, honour, and obey — again establish responsibilities that seem to, out of respect and trust as interpreted by society, further inhibit freedom. These inhibitions are intensified by the lack of creativity in most of the work force.

Routine becomes an accepted way of life — and the escape that is necessary for liberation and survival becomes quite remote. Today's emphasis on the sexual is in many ways disarming. However, it reflects and feeds the needs of a creatively starved society. Because of mass communication the average person is made aware of many things without understanding most.

Programmed role playing begins with pink and blue. Slowly it continues to colour every facet of our behaviour with patterns that inhibit, and in many instances, destroy the creative act of personal character development. We expect children to outgrow their sense of experimentation, their joy of discovery, and their delight in mystery and in the unknown.

Do doctors still play doctor?

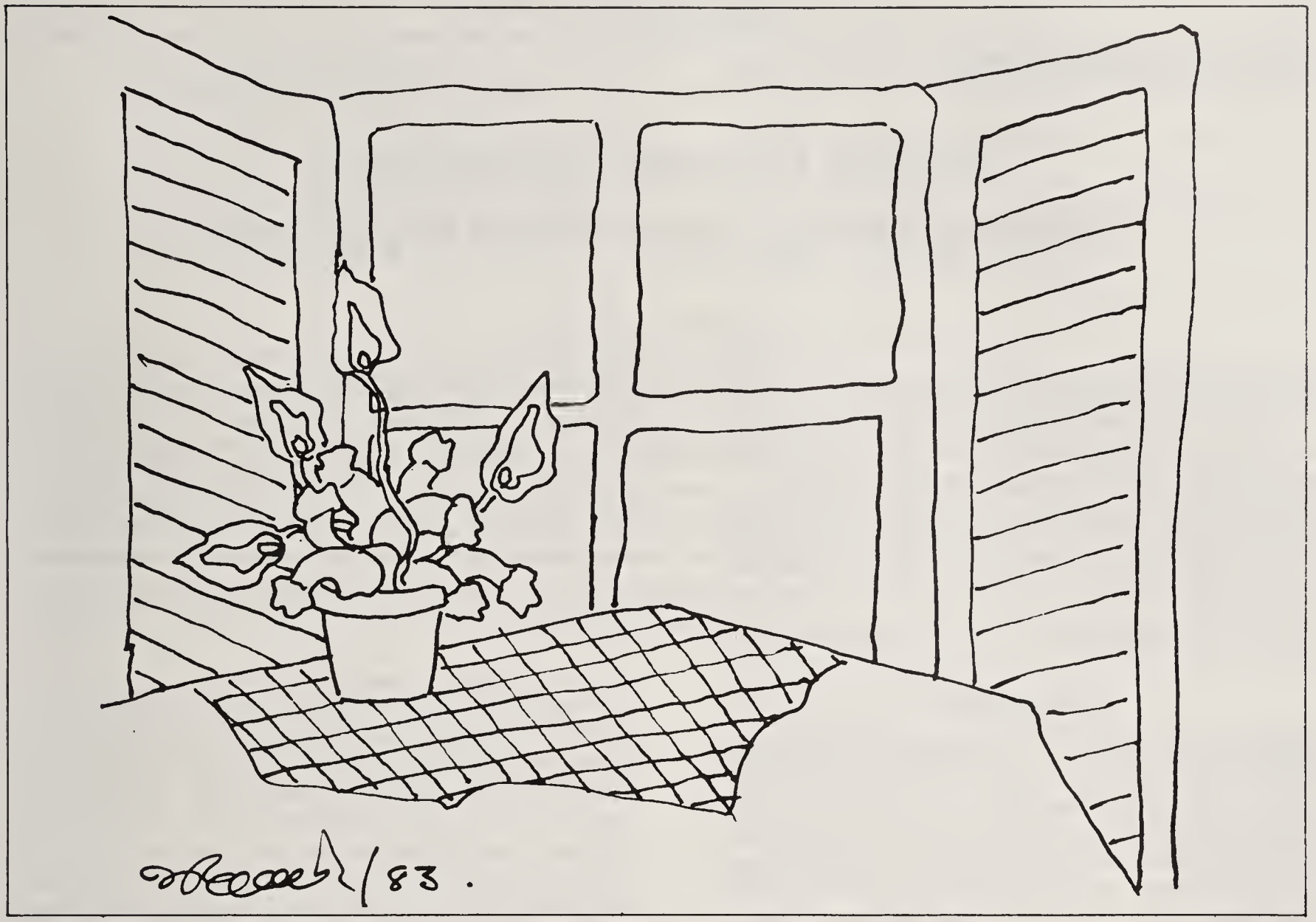
In my observations as a lay person, the words male and female have become obsolete. Feminine and masculine characteristics often seem to be totally interchangeable. I prefer the word *androgynous*. I find that most people whom I consider to be close to complete human beings are, in fact, that mélange: a melding of both the sensitive and the strong.

Toy boxes should not be for chlidren only, and then relegated to the attic after puberty. There can be a definite need for aids in the sexual games people play. Honesty and trust can liberate and allow mystery and discovery to return to our lives. To fight fire with fire, a return to role playing based on individual needs seems logical. Exploration of the senses is necessary to keep any relationship alive.

Rather than suggesting promiscuity and orgyastic sexuality, which seems to be the tone of much popular literature and of many seemingly scholarly studies, I suggest an education based on mutual trust. This will allow for a deeper and more spiritual relationship.

When people are physically handicapped the medical profession endorses any form of sexual practice and stimulation in the name of rehabilitation of the *complete* individual. Why can't the same advice apply to society at large, which all too frequently seems to suffer from a handicap and paraplegia of the psyche? Perhaps patience, trust, and a willingness to learn will allow us to grow and to understand our needs. Then through sharing, the richness and fullness of the tapestry of our lives can be realized.□

Jack Pollock has been a recognized member of the Toronto art community for over 25 years. Born in Toronto in 1930, he graduated from the Ontario College of Art in 1954 and London's Slade School of Art the following year. Returning later to Toronto, he has operated galleries on Elizabeth St., in the Markham St. Village, and across from the Art Gallery of Ontario for a period spanning three decades. As an individual, he is deeply committed to sensualism in his own life and in his art, and in 1980 published a collection of his writings entitled, We All Are All (and other thoughts on days alone) *to celebrate the 20th anniversary of his gallery and his own 50th birthday.*



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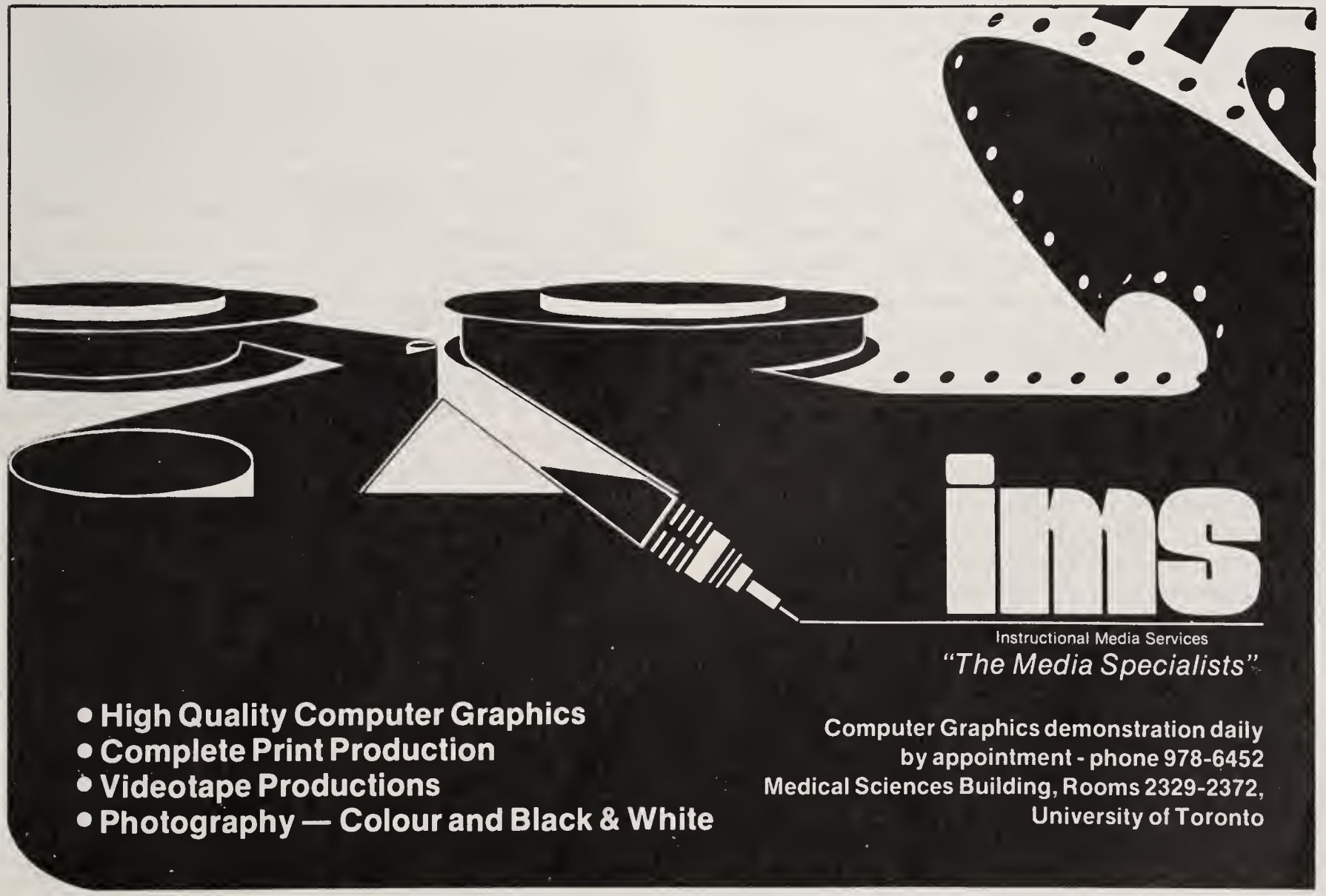
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PREVENTIVE MEDICINE

Breast Cancer Screening: Formulating Your Own Opinion

Fred Matzinger 8T3

Breast cancer is presently the leading cause of disability and death from cancer in women, and the number one cause of death overall in women aged 35-54 years. New developments in its medical and surgical management have not resulted in improved survival following diagnosis of the disease. Attention is now focused on methods of detecting the disease at a time in its course when it is curable with good prospect of survival. The methods of screening under study are medical history, physical examination of the breast, and mammography. In the face of great medical controversy about screening for breast cancer, it becomes the responsibility of each physician to examine personally the information available and formulate an individual approach to this very common and lethal disease.

Introduction

Breast cancer is the largest single cause of death in women in the age group 35-54 years. Current estimates show that one of every 11 women will develop cancer of the breast during her lifetime. To stress the incidence of this disease, the American Cancer Society presents the figures as follows: in the United States, every 15 minutes, three women develop breast cancer and one woman dies of the disease.[1] Statistics often do very little to inspire concern. In the case of breast cancer, however, these statistics mean that all physicians and a large percentage of the public will witness the distressing final stages of this disease.

Medicine has three basic strategies in its approach to disease: prevention, detection, and management. Prevention of breast cancer does not seem possible at this time and in spite of the many new and varied medical and surgical approaches to the disease, the mortality from breast cancer has remained unchanged for approximately 40 years.[2]

The focus of study now is on the detection of breast cancer at a point in its natural history when it is curable and when intervention will lead to improved survival. Various screening programs are now being evaluated as the method of detection of breast cancer in the asymptomatic female population. Conclusive evidence from these clinical trials will dictate the future public health policy regarding widespread screening for this common and lethal disease. However, such evidence may not be available for a decade to come and hence the individual physician must define a personal approach to breast cancer screening in the interim, based on currently available information.

Breast Screening and Potential Biases

"Screening tests sort out apparently well persons who have a disease from those who probably do not. A screening test is not intended to be diagnostic."[3] Implicit in this definition is the understanding that it is not appropriate to refer symptomatic patients to screening centers.

There are two potential biases hypothesized to be characteristic of the disease itself which may skew the interpretation of screening trial results. The first is lead-time bias. It means that if a lethal diseaes is detected, say, two years earlier and patients now live just two years longer from the time of diagnosis to death, there has been no true increase in survival and thus no real benefit from earlier diagnosis. The second is length-bias[4]. The idea here is that, biologically, some cancers may behave like a subtype with better prognosis due to slower growth and spread. If disease progression was slow, the preclinical, but detectable stage of the cancer would be longer, allowing more time for screeening to detect the lesion. By finding these neoplasms with the most favourable disease progression rates, screening might falsely appear to be of great benefit. These two concepts imply that there is an increased likelihood of cancer being detected by screening, but that benefit of increased survival does not necessarily follow from earlier detection.

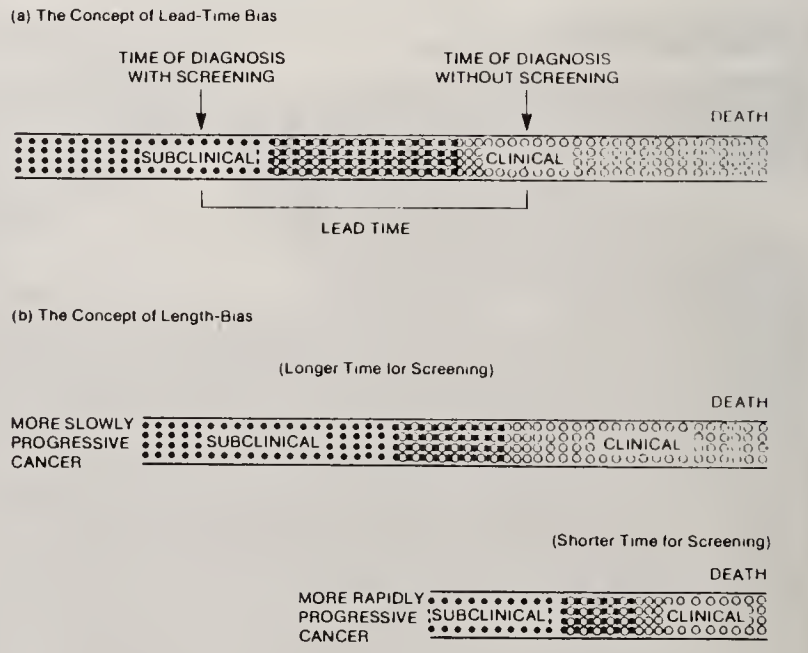


Figure 1. Potential Biases Affecting Interpretation of the Results of Screening Tests.

Landmark Studies of Breast Cancer Screening Programs

Much of what is known about screening for breast cancer has been derived from two landmark American studies, the Health Insurance Plan of Greater New York trial (HIP) of the 1960's, and the U.S. Breast Cancer Detection Development Program (BCDDP) of the 1970's.

The HIP Study

The Health Insurance Plan of Greater New York, a prepaid group practice, began its controlled, randomized trial in 1963. Its aim was to establish whether periodic breast cancer screening with mammography and clinical examination would result in a reduction in mortality from breast cancer. The study group consisted of 62,000 women aged 40-64 who were randomly allocated to screening by mammography and clinical examination, or to the control group in which women would follow their usual practices in receiving medical care. Study women were offered 4 annual examinations with mammography and physical examination.

Analysis of the HIP data at 7 years showed that :

1. Combined physical examination and mammography reduced mortality from breast cancer in women over age 50 by 40%. Below age 50, there was no difference in mortality rates between the study and control groups.

2. The mortality among women aged 50-59 who developed breast cancer and who received annual mammography and physical exam was 45% lower than in the control group. The lower mortality was presumably due to discovery of the cancer at an earlier stage before metastatic spread.

The HIP study did not allow for a separate assessment of the contribution of physical examination versus mammography of the breast, and thus this major problem was left unsolved.

The BCDDP

Results of the HIP study intensified interest in breast cancer screening programs. In 1973, the American Cancer Society and the National Cancer Institute began the U.S. Breast Cancer Detection Development Project (BCDDP). This study was not a randomized, controlled trial of cancer screening. Rather, its purpose was to disseminate the techniques of early detection of breast cancer to both the public and the medical profession. Its originally intended focus of study then was on the operational aspects of running a breast cancer screening program. It was decided to collect and analyse data anyway in the hope that it might provide valuable information about breast disease. Between 1975 and 1981, 280,000 women were screened at 27 centers across the U.S. using medical history, physical examination, and mammography. Women were taught self-examination of the breasts and encouraged to practise it monthly. Women aged less than 50 did not receive mammography unless they had a previous diagnosis of breast cancer or a family history of breast cancer in a first-degree relative.

Analysis of the BCDDP data showed:

1. Increased detection rates of breast cancer from mammography alone as compared with the HIP study . Mammography alone was the indication for biopsy in 41.6% of cases detected.

2. Physical examination alone detected only 8.7% of the cancers.

3. The false negative rate for mammography was 9%. However, the false negative rate for physical exam was 45% in women with proved breast cancer.

4. Equal efficiency of case detection by mammography in women under and over age 50.

5. Mammography was much more sensitive than physical examination in detecting smaller cancers, either non-infiltrating (*in situ*) or infiltrating (<1 cm).

6. More than 80% of all cancers detected showed no evidence of nodal metastases. According to tumor registry data these patients should have an excellent prognosis. (80-90% 5 year survival versus 65% for those with spread to axillary nodes.)

Table I compares the BCDDP project and the HIP program according to the modality that detected the cancers, (mammography and/or physical examination [5]).

Table II compares the results of the two trials by lesion size and modality findings.[5]

Table I

Breast cancers detected during the 5-year Breast Cancer Detection Demonstration Project (BCDDP) compared with the 4-year Health Insurance Plan of Greater New York Screening Program (HIP)

	BCDDP		HIP	
Suspicious Modality	Ages 40-49 at surgery Percent	Ages 50-59 at surgery Percent	Ages 40-49 at surgery Percent	Ages 50-59 at surgery Percent
Mammography only	35.4	42.1	19.4	41.5
Mammography and Physical Examination	50.0	49.7	19.4	18.5
Physical Examination only	13.1	6.7	61.3	40.0
Unknown	1.4	1.5	0.0	0.0
TOTAL	100	100	100	100

Table II

Breast Cancers Stratified by Lesion Size and Modality Findings.

Suspicious Modality	Non-infiltrating Breast Cancers Percent	Infiltrating Breast Cancers 1 cm. Percent	Infiltrating Breast Cancers 1 cm. Percent	Breast Cancer Size Not Specified* Percent	Total Number of Breast Cancers Percent
Mammography Only	59.0	52.6	33.7	36.4	41.6
Mammography and Physical Examination	33.0	36.4	55.5	47.3	47.3
Physical Examination Only	5.5	8.4	8.6	13.7	8.7
Unknown	2.6	2.7	2.2	2.6	2.4
TOTAL	100	100	100	100	100

*Breast cancer size not specified includes cancers for which the hospital pathology report did not give the specific lesion size and/or for which a project pathologist did not carry out a slide review.

The Risks of Screening for Breast Cancer

The results of the U.S. Breast Cancer Detection Development Program suggest that mammography may be more effective than any other existing screening procedure. There are, however, two potential risks of screening with mammography, overtreatment and irradiation-induced breast cancer.

Overtreatment?

Because of its apparent sensitivity in detecting minimal lesions, overtreatment in the form of unnecessary biopsies and mastectomies may be a consequence of mammography. For example, in the U.S. BCDDP trial, the pathology review board estimated that 27% of those regarded as having minimal breast cancer (i.e. *in situ* or invasive < 1 cm.) actually had benign or borderline disease.[6] Some of these patients had been treated with radical mastectomy. More limited surgical resections are now used by some surgeons allowing for preservation of the breast in early-stage disease. A possible advantage of screening would be breast-conservation surgery available for the minimal disease case it detects. Nevertheless, the true natural history of the preinvasive or *in situ* lesions is unknown. Although it seems reasonable to assume that all large cancers were once small, there is no evidence that all small tumors become large. Whether it progresses, stabilizes, or regresses might be inferred from current studies that could determine if treatment of such disease leads to lower mortality.

Radiation Risk?

Considerable public anxiety has centered around the speculation that irradiation of breast tissue in mammography may itself induce breast cancer. This concern became prevalent in 1976 following the wide dissemination in the media of frightening reports about mammography. Some even predicted an epidemic of mammography-induced breast cancers in future years. Locally, an alderman on the Toronto Board of Health, Richard Gilbert, concluded that a proposed Canadian study of screening for breast cancer using mammography was unethical, and Dr. Morton Shulman attacked the study on the grounds of radiation risks in his Toronto Sun column and on television. Such unwarranted reports have unfortunately led to a decline in the use of this potentially life-saving technique.

There are three studies of women who developed breast cancer after being exposed to large doses of radiation: 1) the population exposed to the atom bombs of Hiroshima and Nagasaki (whole body radiation); 2) a group of women with tuberculosis who received fluoroscopic examinations of the chest; and 3) a group of women treated with radiation for post-partum mastitis. The total dose of radiation in each situation was much higher than from mammography. In the first two studies, the observed increase in breast cancer occurred predominantly in females who were exposed when young, mainly under age 35. The risks of radiation-induced breast cancer was greatest if exposure occurred during the second decade of life, especially at menarche, and decreased as age at time of exposure decreased. The data suggests that the young female breast is more susceptible to radiation-induced cancer and that after age 35, radiation has far less potential for inducing breast cancer.[7] Mammography is not usually recommended for young, asymptomatic women. In the post-partum mastitis study, few women were over age 40, and there was no difference in risk by age. However, there was no difference in the number of breast cancers between women who received the lowest dose levels (0-9 rad) and women who received no radiation at all.[7] Mammography falls within this range of low-dose radiation exposure.

At present, the dose of radiation from a mammogram is approximately 0.2-0.3 rad.[8] In comparison, an average individual receives about 0.1 rad per year from natural sources (cosmic rays, radium and radon in the ground and in building materials, and internal potassium 40). New achievements and careful attention to technical factors such as the type of machine, the film, the processor, positioning of the patient, and adequate compression of the breast have greatly improved the diagnostic sensitivity of mammography. In addition, this improved sensitivity has been achieved with a substantial reduction in radiation dosage. Indeed, the poor quality mammography of the 1960's may account for the HIP conclusion that screening women under 50 with mammography and physical examination did not reduce mortality from breast cancer. Poor quality mammography would have been less likely to detect small lesions in the more glandular breasts of women under age 50.[8]

That low-dose radiation might induce breast cancer or any other type of cancer is based on the assumption that the radiation dose-effect curve is linear for all levels of radiation. On the contrary, some believe that a less harmful exponential relationship (convex down) between radiation dose and cancer induction exists at low levels of radiation. The risks of low dose radiation and the concept that there exists no safe threshold dose of radiation is thus hypothesized but not proved. The natural risk that an average woman will develop breast cancer is estimated to be 7%. Using the more conservative linear dose-effect model, it has been calculated that a dose of 0.33 rad to the breast would allow for 39 annual mammograms before the risk increased by 1% from 7 to 8%. As in many valuable medical procedures, anticipated benefits must be weighed against potential risks. All studies to date suggest that the potential benefits derviced from the current low-dose mammography far outweigh the risks.[10]

It must also be remembered that mammography is a complementary procedure in evaluating a breast problem. However, when physical examination reveals a finding sufficient to advise biopsy, then a biopsy should be performed, even in the face of a normal mammogram. The medical profession and the public should realize that the proper application of mammography can save lives.

Unanswered Questions

Despite all this supportive evidence for the use of mammography, the question of how it should be applied in breast cancer screening is yet unresolved. Results of the HIP study showed decreased mortality from screening with mammography and physical examination, but did not give evidence that it was mammography as distinguished from the physical examination which resulted in the benefit. Some have speculated that physical examination was the more important component. As for the BCDDP, it demonstrates that many cancers are found by mammography at a stage when physical examination is negative. This does not necessarily prove the worth of screening since there was no control group for

comparison. Thus it is impossible to know if the many early-stage cancers would not have been discovered with or without formal screening at a stage where the effects on mortality would be equal. Many very important and complex issues surrounding breast cancer screening may be resolved by a randomized, controlled study now underway in Canada.

Canada's Answer — The National Study of Breast Cancer Screening

The National Study of Breast Cancer Screening, organized jointly by the National Cancer Institute of Canada and Health and Welfare Canada began as a multi-centered study in January 1980. Ninety thousand women aged 40-59 years will be recruited as volunteers at 14 centers across Canada. Participants will fill in a questionnaire that will be used to identify risk factors for breast cancer, and will sign an informed consent. After initial physical examination and instruction in breast self-examination, they will be randomized into those who will receive mammography and those who will not. The women receiving mammography will be invited to return annually for 5 years for the same screening. In the group not allocated to receive mammography, those aged 50-59 will be invited to re-attend physical examination annually for 5 years, while those aged 40-49 years will not return to the screening center, but will remain under regular care of their physicians.

These are the aims of the National Study of Breast Cancer Screening:

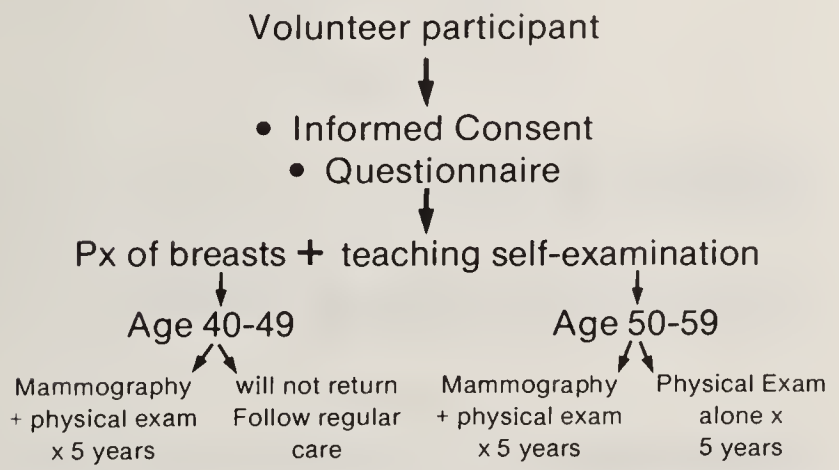
1. To determine whether screening of volunteers aged 40-49 with combined physical examination of the breasts and mammography will reduce breast cancer mortality.

2. To compare in women aged 50-59, screening by mammography and physical examination of the breasts to screening by physical examination alone in terms of mortality reduction.

3. To attempt to identify risk factors for breast cancer and hence those women most suitable for screening programs.

4. To analyse cost-effectiveness of screening for breast cancer with mammography.

5. To obtain data on the natural history of breast cancer so that computer simulation might determine the optimum age to commence screening and the appropriate frequency of screening.


Volunteer participant
• Informed Consent
• Questionnaire
Px of breasts + teaching self-examination
Age 40-49
Age 50-59
Mammography + physical exam x 5 years
will not return Follow regular care
Mammography + physical exam x 5 years
Physical Exam alone x 5 years

NOTE: If an abnormality is detected, referral is made to the study surgeon for review. Family doctors of all participants receive reports and then decide on further management.

FIGURE 2. Canadian National Breast Screening Study

Your Choice of Management

Screening for breast cancer in some form or other does promise to reduce mortality from cancer in women. Accepting that all the evidence will not be in before the end of the decade, how can the individual physician best manage the asymptomatic female patient in his or her practice? Unfortunately there is no clear answer. Having examined personally the data available, the well-informed physician might chose from the following alternatives:

1. Await the results of a controlled, randomized clinical trial. The National Cancer Institute of Canada and Health and Welfare Canada recommend that physicians await the results of a controlled, randomized clinical trial before they establish the widespread use of screening with physical examination and mammography for their female patients.

2. Consider following these guidelines suggested by the American Cancer Society. (Report of the Task Force on Breast Cancer Control. July, 1982)

- Women 20 years of age and older should perform breast self-examination every month.
- Women 20 to 40 should have a physical examination of the breast every three years, and women over 40 should have a physical examination of the breast every year.
- Women between the ages of 35 and 40 should have a baseline mammogram.
- Women under 50 should consult their personal physician about the need for mammography.
- Women over 50 should have a mammogram every year when feasible.
- Women with personal or family histories of breast cancer should consult their physicians about the need for more frequent examinations, or about beginning periodic mammography before age 50.

The Canadian Task Force on the Periodic Health Examination currently advises that women over 50 should have mammography every year.

The last item in the guidelines concerns high-risk patients. A previous history of breast cancer increases risk five to seven times and breast cancer in the mother or sisters increases risk two to three times.

3. Refer patients to the Canadian National Breast Cancer Screening Study.

Physicians practising near the 14 Canadian screening centers can effectively deal with this issue by encouraging their female patients age 40-59 to take part in the study. (The Toronto center is located at Mount Sinai Hospital, 5th Floor, 596-3972. Pamphlets and other material are available for distribution in your office.)

Conclusion

The need for early detection of breast cancer is clearly accepted. What form of widespread screening is ultimately most effective in terms of risk/benefit and cost effectiveness remains to be determined. For now, the well-informed physician should develop a procedure for screening for breast cancer through mutual agreement with his or her well-

informed patient. Such is the Art of Medicine, where the truth lives nowhere written in stone. □

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PEDIATRIC CARDIOLOGY

Surgical Evolution in the Management of Transposition of the Great Arteries

Stephen P. Hardy, 8T4

Transposition of the great arteries is among the most common congenital malformations of the heart. Advances in the understanding of this anomaly have led to remarkable progress in its surgical treatment. These advances have led not only to gratifying improvements in prognosis for these children but to more questions about the nature of the anomaly itself. From a basic presentation of the pathophysiology of the malformation, this paper traces the development of the surgical treatment of transposition of the great arteries from the earliest modifications of the hemodynamics to current attempts at total anatomic correction.

Complete Transposition of the Great Arteries (TGA) represents 9% of the total clinical cases of congenital heart disease seen at the Hospital for Sick Children in Toronto.[10] These infants present with intense cyanosis and congestive heart failure, usually within the first two months of life. Untreated, 30% die in the first week, 50% in the first month, and 90% in the first year.[12] Although exquisitely precise anatomic definitions have been developed,[22] TGA can be said to be present when the right ventricle gives rise to the aorta and the left ventricle to the pulmonary artery. The aorta is usually situated anteriorly and to the right of the pulmonary artery. As shown in Fig. 1, this arrangement leaves us with two circulations in parallel instead of in series.

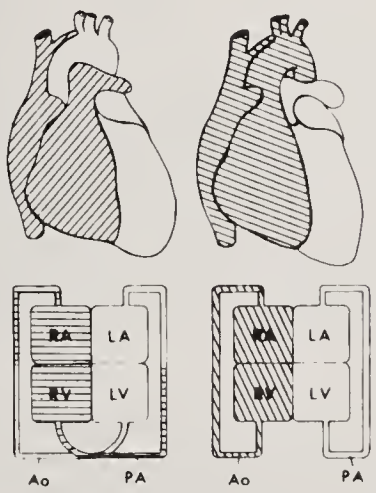

Fig. 1. The normal heart and circulation are contrasted with those in complete transposition of the great arteries. *RA, LA,* right and left atrium; *RV, LV,* right and left ventricle; *PA,* pulmonary artery; *Ao,* aorta. Reproduced from Keith JD, Rowe RD, Vlad P: *Heart Disease in Infancy and Childhood* 3rd ed. (New York: MacMIllan, 1978) p. 591.

Physiology

Fetal physiology is disturbed only to the extent that poorly oxygenated blood perfuses the head, coronary arteries and upper body, while better oxygenated blood perfuses the lower body. It is not known if this reversed oxygenation pattern has any deleterious effects in the short or long term.

Postnatally, however, closure of the foramen ovale and ductus arteriosus causes critical systemic hypoxia. Consequently, TGA is compatible with a life span of more than a few months only if there is blood exchanged between the two parallel circulations at atrial, ventricular, or great arterial level. The actual volume of blood exchanged is usually quite small in comparison to the total blood flow but comprises the true physiological circulation (i.e. blood which transports O_2 from the lungs to the body). Blood entering the right atrium and ejected into the pulmonary artery can be thought of as the effective pulmonary blood flow. This "right to left shunt" must be balanced by an equal and opposite "left to right shunt" which consists of blood entering the left atrium and being ejected into the aorta: the effective systemic blood flow (Fig. 2). If these two volumes are not equal over any short period of time, one circulation will be flooded while the other is depleted.[10]

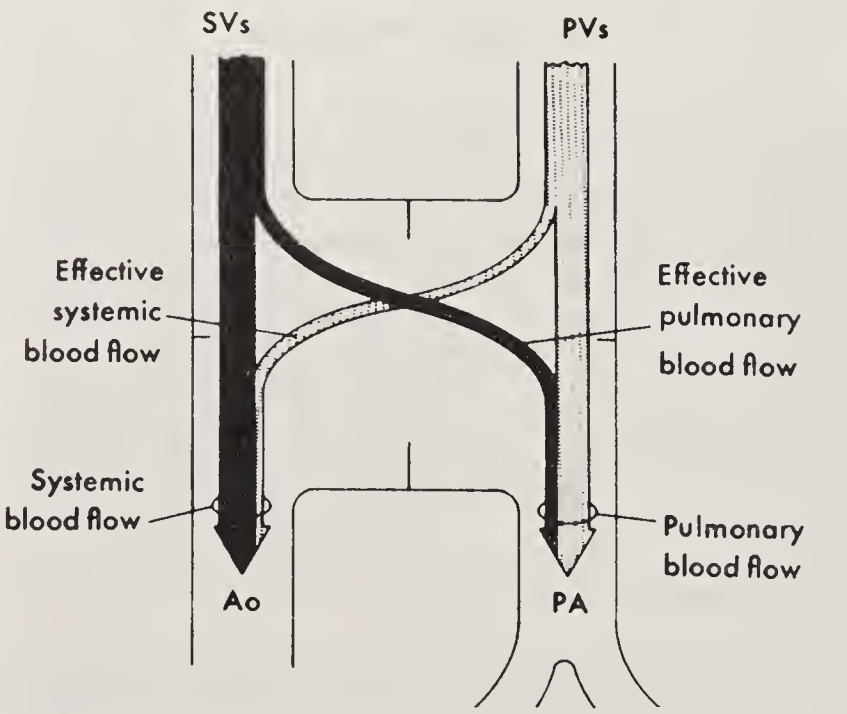

Fig. 2. Diagram of the circulation and shunts in complete transposition. *SVs, PVs,* systemic and pulmonary vein; *PA,* pulmonary artery; *Ao,* aorta. Reproduced from Keith JD, Rowe RD, Vlad P: Heart Diseaes in Infancy and Childhood 3rd ed. (New York: MacMillan, 1978) p. 594.

Theoretically, one might expect that as the degree of mixing between the two circulations is increased, systemic hypoxia would decrease and the prognosis of the patient would be improved. This was confirmed in a natural history study conducted by Liebman[12] (Table 1). These data revealed an average life span of only 0.11 years for simple transposition (no mixing) as compared to 6.79 years for transposition with single ventricle (maximal mixing). One interesting point revealed by this study was that the effect of a ventricular septal defect (VSD) depended upon the presence or absence of pulmonic stenosis. A VSD without pulmonic stenosis, although improving mixing, can also lead to pulmonary vascular disease and congestive heart failure. Pulmonic stenosis, by restricting pulmonary blood flow, serves to protect against these complications and improves the average life span.

Table I.

Type of Transposition	% of Cases	Average life span (years)
Simple	43.8	0.11
♂ ASD	14.1	0.81
♀ ASD	14.1	0.81
♂ VSD + pulmonary flow	11.0	0.28
♂ VSD + PS	5.9	4.85
♂ single ventricle	3.1	6.79

From: Liebman J., Cullum L., Belloc N.: Natural history of tranposition of the great arteries: Anatomy and birth and death characteristics.

Circulation: 40: 237, 1969.

Approaches to Treatment

The logical surgical solution to the problem of TGA would be to simply correct nature's error and "retranspose" the great arteries. In the 1950's, attempts at this approach were complicated by two major problems: 1) there were technical difficulties in moving the coronary arteries along with the aortic root and 2) adequate cardio-pulmonary bypass was not yet available. In 1952, seven patients at the Hospital for Sick Children underwent a retransposition operation while maintained on cardiac bypass and a biological oxygenator consisting of monkey lungs.[14] Although the monkey lungs appeared to work quite well, no patients survived more than three hours post-operatively. The discouraging results of many attempted retranspositions forced surgeons to develop procedures along two different lines.

The first approach was based on the idea that if the patient's survival depended upon adequate mixing between the two circulations, then the creation of an atrial or ventricular septal defect would improve survival. In the late 1940's, Blalock and Hanlon at the Johns Hopkins Hospital developed an operation which improved mixing by creating an atrial septal defect.[4] The earliest studies of this operation showed a mortality rate of 30-50%, but those who survived seemed to be much improved. Recent series demonstrate a mortality of 10-15% and improvements of arterial O_2 saturation to as high as 79% which are well maintained for long periods of time.[13]

In later years, the role of improving mixing in the hypoxic infant with TGA was expanded by the non-surgical technique of balloon atrial septostomy.[17] When the diagnosis of TGA has been made in the catheterization lab, mixing can often be improved immediately by placing a balloon-tipped catheter through the foramen ovale into the left atrium, filling the balloon with contrast material and pulling the catheter back across the atrial septum. This sudden "pull-back" tears the atrial septum, creating an atrial septal defect and improving oxygenation in many patients. The advantages of this technique are that marked clinical improvement can be obtained without the risk of surgery while any surgery which might be necessary can be performed later under more auspicious circumstances.

Although helpful, the "improved mixing" approach to TGA is essentially palliative. No attempt is made to correct the underlying problem. After the discouraging results with arterial retransposition, several investigators realized that another solution might be to transpose the venous inflow so that systemic venous return would somehow enter the left ventricle while pulmonary venous return entered the right ventricle. Initial attempts involved the extracardiac reconstruction of the venous return. A palliative operation devised by Baffes[2] involved transferring the inferior vena cava to the left atrium and the right pulmonary veins to the right atrium. Although this operation produced some improvement in severely cyanosed children, it was extremely complicated and technically difficult.

An idea first discussed by Albert in 1954[1] was that the venous return to the heart could be redirected within the atria by reconstructing the atrial septum. He showed this operation to be feasible in dogs but it was left to Senning, in 1959[19], to achieve the first clinical success with intra-atrial correction of TGA. Several groups subsequently reported success with this technique but with a high operative mortality: Kirklin[11] reported a series of eleven patients with only three long-term survivors. The technical difficulty and high mortality of this operation prevented it from being enthusiastically accepted.

In 1964, the Hospital for Sick Children group, under Dr. William Mustard, reported success with a different intra-atrial repair.[15] After removing the atrial septum, a baffle of pericardium was sutured into the common atrium in such a way as to direct the pulmonary venous return into the left ventricle (Fig. 3). The initial series of seven patients produced five survivors, four of whom made rapid recoveries and showed normal hemodynamics on recatheterization. The advantages of this operation were its simplicity and its applicability to the heart with a previous atrial septectomy (Blalock-Hanlon procedure). These features encouraged its rapid adoption by many centres, making the Mustard procedure the operation of choice for repair of TGA.[5] Recent studies have demonstrated the operative risk to be less than 2% and the 5-year actuarial survival to be 93%.[21]

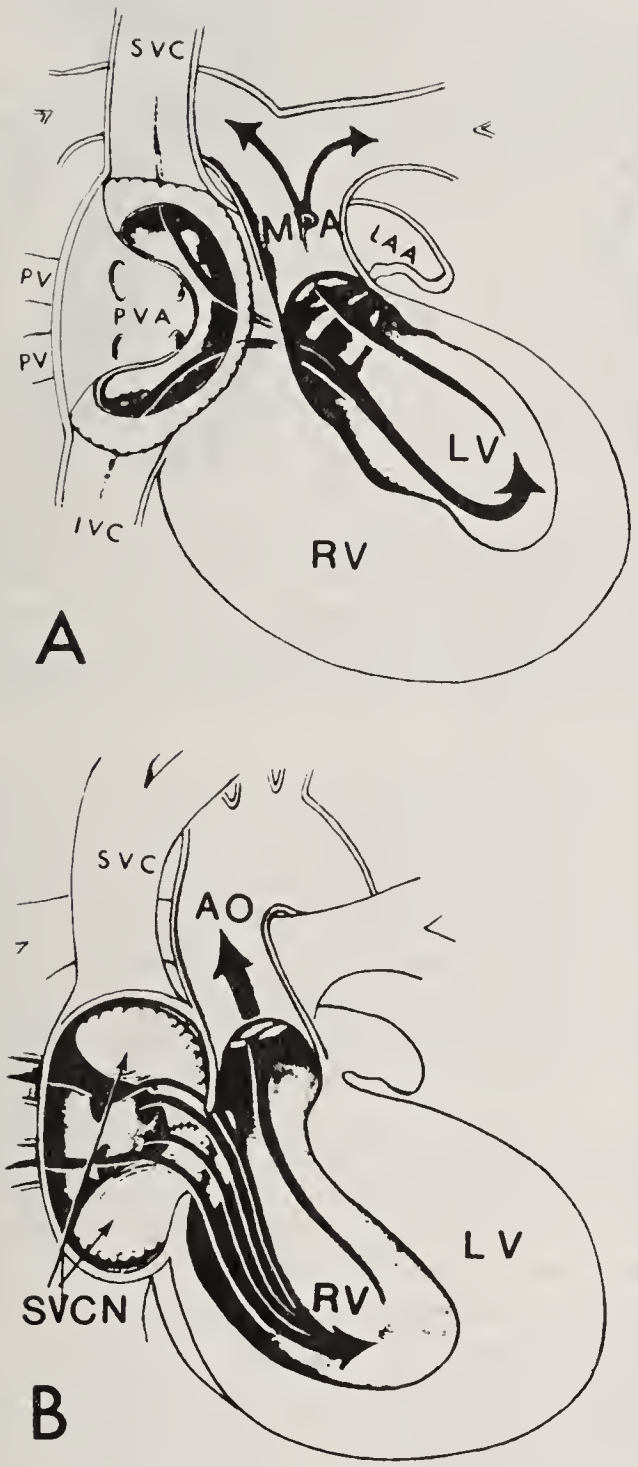

Fig. 3. Circulation pathways in the systemic (A) and pulmonary (B) *venous return* after intra-atrial repair (Mustard operation). *SVC, IVC,* superior and inferior vena cava; *SVCN,* systemic venous baffle conduit; *PV,* pulmonary veins; *PVA,* pulmonary venous atrium; *RV, LV,* right and left ventricle; *Ao,* aorta; *MPA,* main pulmonary artery; *LAA,* left atrial appendage. Reproduced from Moss AJ, Adams FH, Emmanouilides GC: *Heart Disease in Infants, Children and Adolescents* 2nd ed. (Baltimore: Williams & Wilkins, 1977) p. 328.

Controversies

Although the Mustard repair for TGA has drastically altered the prognosis for children born with this anomaly, many continue to have serious problems, some thought to be due to the procedure itself. As might be expected from atrial surgery, atrial dysrhythmias have been reported in all series of children undergoing the Mustard repair. Although some early reports suggested the incidence of atrial dysrhythmias to be high as 40-50%,[13] several recent reports have noted from 89 to 96% of patients with normal sinus rhythm on discharge from hospital.[4, 20, 21]

More controversy surrounds the incidence and significance of right ventricular (RV) dysfunction following the Mustard procedure. On theoretical grounds, the most dissatisfying feature of the Mustard operation is that it leaves the RV as the systemic pumping chamber, a function for which it is thought to be structurally unsuited. Although the incidence of overt right ventricular failure or tricuspid insufficiency is known to be low,[6] several studies of asymptomatic children have revealed abnormally low RV ejection fractions[8] while another reported an abnormal cardiac response to exercise.[3] It has not been demonstrated that this RV dysfunction is clinically significant or progressive but its presence has prompted much investigation and discussion concerning the long-term ability of the RV to maintain systemic pressures.[7] While many authors believe that RV dysfunction is a result of its intrinsic inability to sustain systemic workloads,[25] others suggest that the entire myocardium in the TGA heart may be abnormally sensitive to ischemia,[3] possibly due to the relative coronary ischemia present in the transposed fetal circulation. It is evident that these two positions lead to different conclusions regarding the necessity for operative alternatives to the Mustard procedure.

During the first decade following the introduction of the Mustard procedure, it became evident that several subgroups of children with complex TGA did not benefit as greatly as children with simple TGA. At the Hospital for Sick children between 1973-1980, children with TGA and VSD undergoing Mustard plus VSD repair faced a 21% operative mortality and a 5-year survival of 44%, considerably worse than those with simple TGA[23]. Children with TGA + VSD + pulmonic stenosis also experienced much higher operative and long-term mortality due to the difficulty of repairing the posteriorly-placed left ventricular outflow tract obstruction while patching the VSD. Many of these children are now treated with an operation devised by Rastelli at the Mayo Clinic (Fig. 4).[18] In this procedure the pulmonary artery is divided and the proximal segment closed while the distal segment is connected to an extracardiac conduit from the RV. The LV outflow is directed through the VSD to the aorta by an intraventricular baffle, bypassing the stenotic pulmonic valve. While improving survival for children with this set of defects,[10] the Rastelli procedure produces an intellectually more satisfying result than the Mustard repair, with the LV resuming its "natural" function as the systemic pumping chamber.

Why Switch?

In 1975, Jatene reported the first successful arterial switch (retransposition) operation for transposition of the great arteries.[9] This success was rapidly followed by similar reports from other groups.[24] The critical problem of moving the coronary arteries was solved by excising them from the aorta with a cuff of surrounding aortic wall and then implanting them into the pulmonary artery. Following that step, the aorta and pulmonary artery were both transected and the proximal PA was joined to the distal aorta while the proximal aorta was joined to the distal PA (Fig. 5).

After the arterial switch operation was shown to be feasible, cardiologists and surgeons were faced with the problem of deciding to whom it should be applied. Any enthusiasm for immediate application of the arterial switch to all patients with TGA was tempered by the knowledge that early reports had produced a combined mortality of almost 50%.[6] The ultimate decisions of different groups regarding the use of the arterial switch reflected their underlying concerns about the Mustard operation and TGA itself.

Fig. 4. Rastelli operation[18] for transposition of the great arteries with ventricular septal defect and extensive left ventricular outflow tract obstruction. (A, B, C) Details of surgical procedure (modified, from Rastelli GC, McGoon DC, and Wallace RB, *J. Thoac. Cardiovasc. Surg.* 58: 545, 1969). (A) interior of right ventricle (*RV*) demonstrating relationship of ventricular septal defect (*VSD*), tricuspid valve (*TV*), and aortic valve. (B) Left ventricle is connected to aorta (*AO*) by tunnel patch extending between *VSD* and aorta. (C) Completed repair with *RV* connected to the distal end of pulmonary artery (*PA*) by valve-bearing prosthetic conduit or aortic homograft. Reproduced from Moss AJ, Adams FH, Emmanouilides GC: *Heart Disease in Infants, Children and Adolescents* 2nd ed. (Baltimore: Williams & Wilkins, 1977) p. 330.

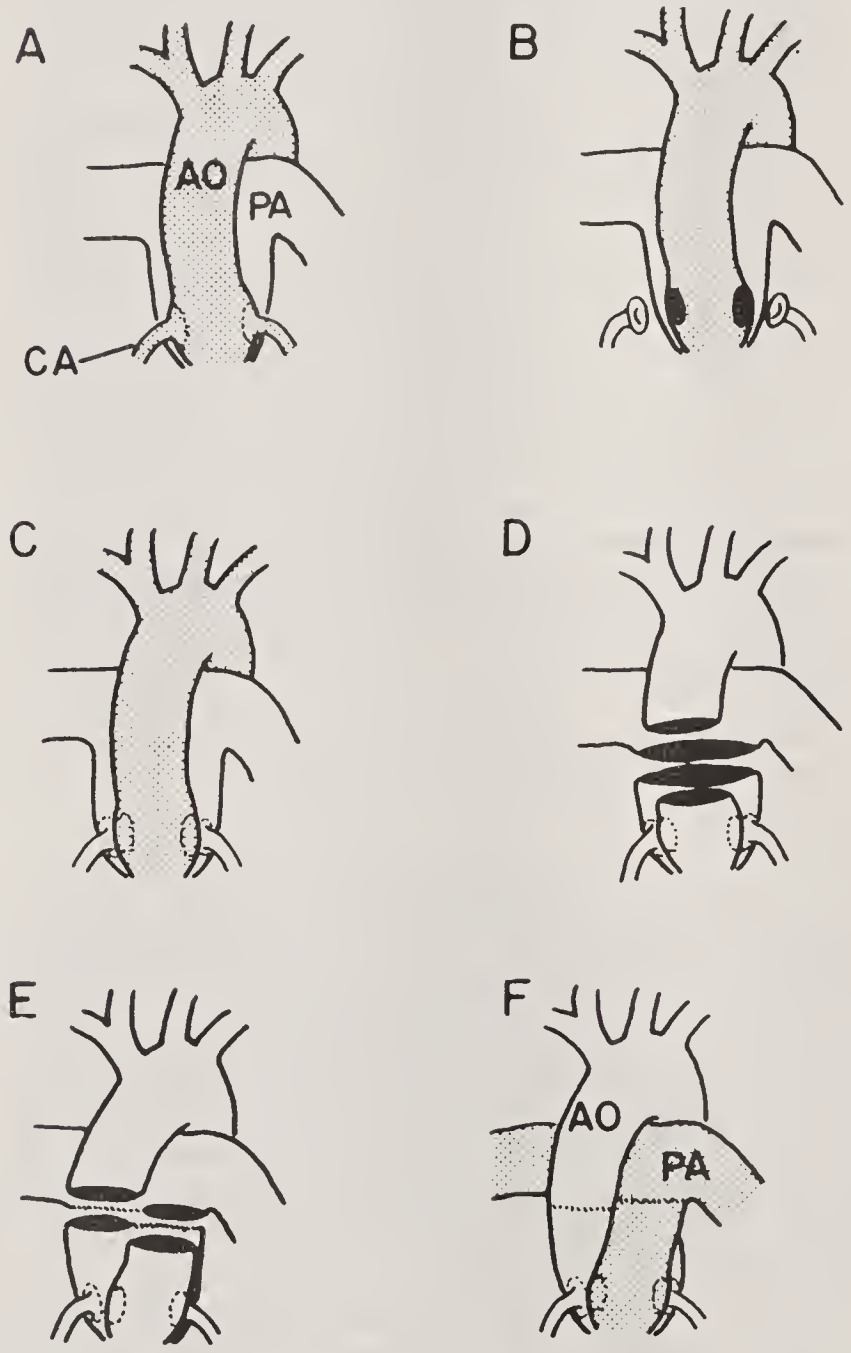

Fig. 5. Anatomic correction of complete transposition by contraposition of the great arteries according to Jatene, *et al.*[9] *AO*, aorta; *CA*, coronary artery; *PA*, pulmonary artery; *shading* indicates path of unoxygenated blood (see text for details). Reproduced from Moss AJ, Adams FH, Emmanouilides GC: *Heart Disease in Infants, Children and Adolescents* 2nd ed. (Baltimore: Williams & Wilkins, 1977) p. 331.

One position, exemplified by the Hospital for Sick Children group, was that the arterial switch could intially be applied only to those children who would face similar operative risks undergoing the Mustard or other procedures. Children falling into this group would include those with TGA & VSD as well as those with more complex transpositions. In 1981, Williams et al reported the results of eight children with complex TGA undergoing the arterial switch operation.[23] There were six survivors, all of whom were in sinus rhythm and clinically well when studied 6 months to 2.5 years postoperatively. The only common residual lesion detected was mild aortic insufficiency, found in five of the six. It was concluded that the arterial switch was a satisfactory alternative for the management of this selected group of patients.

The position taken by Yacoub and others was that the theoretical and practical problems of the Mustard procedure justified the application of the arterial repair to all children with TGA's, even those who would otherwise be safely treated with the Mustard.[25] In 1980, Yacoub reported the results of nineteen patients with simple TGA undergoing anatomic repair.[26] Fifteen were reported to have survived and to have good hemodynamic function despite the presence of mild aortic insufficiency in many.

The success of Yacoub and others in reducing the mortality of the arterial switch has made the operation increasingly attractive to pediatric cardiovascular surgeons. The question remains, however, whether children treated in this way will have any long-term advantage over those treated with the Mustard procedure. The problems of the Mustard are well known but their long-term significance, particularly of RV dysfunction, has yet to be clarified. The problems of the arterial switch are only beginning to be defined yet already aortic insufficiency, a lesion whose significance is well documented in other groups, has emerged as a problem. Since it will likely take many more years to fully document the advantages and disadvantages of each operation, it is probable that the parents of many children with TGA will be offered the new procedure with only theoretical considerations and the good intentions of their surgeons on which to base their decisions. □

Acknowledgements

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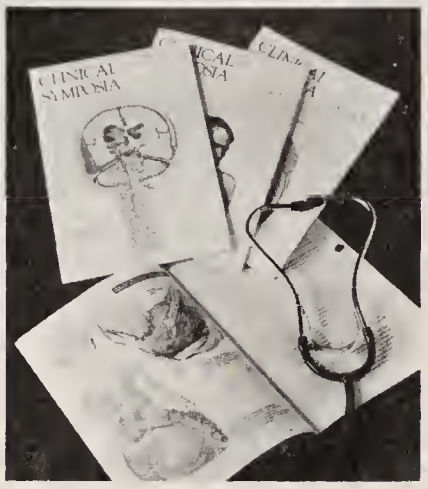

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NEUROLOGY

Observations in Stroke

Michael Cusimano 8T4

A retrospective review of clinical and autopsy data was performed on 148 stroke patients to determine causes and mechanisms of death. Two groups of patients were distinguishable on the basis of causes and timing of deaths. The group of patients dying late (after the ninth day of their stroke) died most often of non-neurological causes (e.g. pneumonia, myocardial infarction), whereas the group dying early (before the ninth day) died of causes directly attributable to the stroke (e.g. uncal and tonsilar herniation). within the group dying early, a previously unreported bimodal distribution of deaths was observed. Multiple hemorrhages, cerebral edema, and the cerebral shock hypothesis (original to this article) were invoked to explain the second peak of early deaths.

The human brain has been the subject of man's curiosity since ancient times, when early anatomists dissected the brain to learn about its structure and function. In the past 300 years, knowledge about the brain has exploded at a pace faster than any other branch of medicine, but certain treatment modalities have changed very little. One such example is the treatment of stroke.

Stroke may be defined as the interruption of nutrient supply (most importantly, O_2 and glucose) for a period of time long enough to cause irretrievable damage. This may result in a wide range of clinical presentations depending on the particular brain structures affected. For example, if cells in the precentral gyrus can no longer function, one would expect impaired voluntary movement in a part of the opposite side of the body.

In general, the most common lesions producing strokes are intracerebral hemorrhage, subarachoid hemorrhage, embolic infarction, or atherothrombotic infarctions.[12] Each type is distinguished by certain clinical, radiologic, and pathologic features and prognoses.[8]

Classically, the cause of death in infarctions has been almost solely been considered to be due to a progressive buildup of cerebral edema, maximal at 3 to 7 days,[1,3,11,13] or due to massive brain-stem infarction causing destruction of the vital cardiorespiratory area. In hemorrhage, the sudden 'mass effect' of the hemorrhage itself has been considered to be the causal factor. The present paper concerns itself with these and related phenomena as determined through retrospective clinical and post-mortem observations in 148 stroke patients.

Materials and Methods

A retrospective study of all patients admitted to the McLachlan Stroke Unit at Sunnybrook Medical Centre was undertaken to determine causes and mechanisms of death.

The study included those patients admitted with a diagnosis of stroke between January 1, 1975 and March 1, 1980 who subsequently died and were autopsied. In an attempt to determine the causes and mechanisms of death in stroke, some 110 parameters were gathered from hospital charts, Stroke Unit Data Files, and autopsy records.

Pathological parameters were divided broadly into cranial findings (e.g., uncal herniations, tonsillar herniations, Duret hemorrhages, presence of midline shifts, etc.) and significant extracranial findings (e.g. evidence of myocardial infarction, pneumonia, peptic ulcer, malignancies, etc.)

Clinical data at the time of presentation to hospital, as well as the clinical situation surrounding the deaths, was obtained. Particular attention was given to parameters such as the history of the presenting illness, level of consciousness, pupillary reflexes, eye movements, fundi, pulse, respiratory patterns, motor responses, deep tendon reflexes, and skeletal muscle tone. If not mentioned specifically in the clinical notes, an attempt was made to determine if the patient appeared to be coning before death.

Cause of death was generally ascertained by autopsy data. Stroke was considered the cause of death if any evidence of uncal or tonsillar herniation, or Duret hemorrhages (secondary brainstem hemorrhages) was noted on examination of the brain.

Data was collected and recorded on standard pre-printed forms. Patients were divided into various groups depending on whether they had suffered an infarction or hemmorrhage, and whether they died before or after the ninth day of their stroke (early deaths vs. late deaths).

Results

Of all patients admitted in the five year study period, 148 died and were subsequently autopsied (autopsy rate of 30%). Male to female ratio was almost unity and the average age was 76 years at the time of stroke diagnosis. There were 40 patients with hemorrhages and 108 with infarctions in the group. Sixty-five lesions were located in the left cerebral hemisphere and 60 in the right. Eleven were confined to the brainstem and 12 occurred bilaterally (e.g. bilateral cerebral hemispheric infarct). Seven patients in the hemorrhage groups showed evidence of multiple hemorrhages (excluding Duret hemorrhages) with all but one patient dying in the

first 2 days after stroke. Twenty patients with infarctions had evidence of multiple infarcts on autopsy, with all patients dying within 31 days of stroke (60% early deaths). The times of death after stroke varied from hours after admission to 5 years and 11 days (death unrelated to stroke). Sixty-four patients (32 with hemorrhages and 32 with infarctions) died within 9 days of their stroke and 84 (8 with hemorrhages and 76 with infarctions) died after the ninth day.

Apparent causes of death are summarized in Table I. Stroke accounted for one half of deaths. Cardiac and pulmonary causes each accounted for approximately one-fifth of deaths. Pulmonary embolus and cancer were not major causes of death (only attributed to 4 and 2 per cent of deaths respectively).

Table I. Apparent Causes of Death

CAUSE	PRESENT STUDY n=148. percentage	BOUNDS et al., (4) MCA infarcts 35d old n = 100 percentage
Stroke	47	31(herniation)
Pneumonia	22	29
Cardiac	16	17
Pulmonary Embolus	4	13
Cancer	2	--
Others	9	10

Within the hemorrhage group 80% of deaths occurred before day 9 whereas in the infarct group 40% of deaths occurred before the ninth day. Overall, 43.2% of deaths occurred before day 9. The frequently distribution on all deaths appears in Figure 1.

Frequency distribution for early deaths after stroke for the hemorrhage and infarction groups are displayed in Figures 2 and 3 respectively. Each group appears to have a bimodal distribution. In the hemorrhage group, the first peak is very narrow and appears in the first two days after stroke. The second peak appears broader and occurs from days 6 through 9. In the infarction group, the first peak is broader than the first peak in the hemorrhage group and occurs from days 1 to 5. The second peak has a shape very similar in form and time to that in the hemorrhage group and occurs through days 6 to 9. No deaths occured on day 9 in either group.

Regarding pathological finds on autopsy, all 32 early death in the hemorrhage group were accountable by the effects of the stroke itself. There were 28 case of herniation (uncal or tonsillar), Duret Hemorrhage, or both; there were 2 cases of bilateral hemispheric hemorrhage and 2 case of primary brainstem hemorrhage. In the infarction group, of the 32 early deaths, 26 could be easily accounted for by 21 cases of herniation with or without Duret hemorrhages, and 5 cases of brainstem infarction. One death was directly attributable to massive myocardial infarction and one other death was attributed to a dissecting aortic aneurysm. Both of these cardiovascular deaths' occurred on day one and were the only

Figure 1: Frequency Distribution of all Deaths

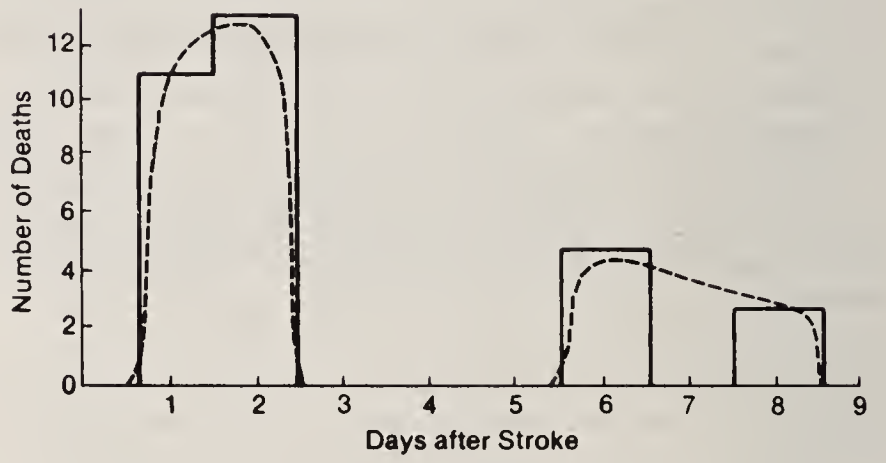

Figure 2: Frequency Distribution of Early Deaths (Before Day 9); Hemorrhage Group (n = 32)

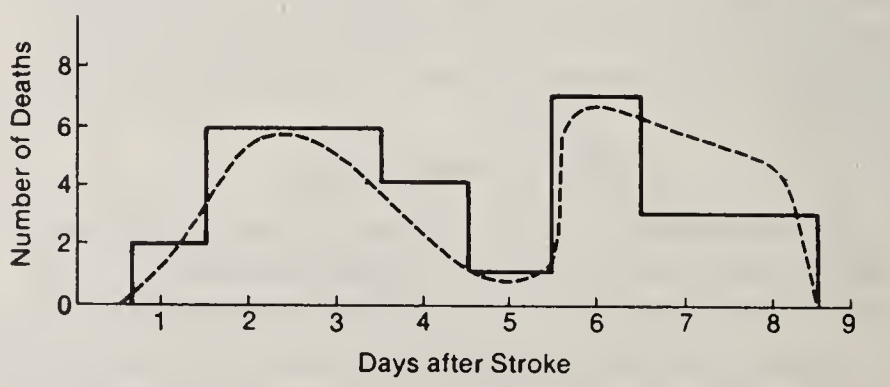

Figure 3: Frequency Distribution of Early Deaths (Before Day 9); Infarct Group (n = 32)

deaths in the infarction group to occur on the first day. Three people with left cerebral hemispheric infarcts and one with a right hemospheric infarct died within the first nine days without neuropathological signs (e.g any herniations, Duret hemorrhages, massive edema, or midline shifts) to which death could be directly attributed. Neuropathological findings suggestive of increased intracranial pressure have been summarized in Table II.

Table II. Findings Suggestive of Increased Intracranial Pressure

FINDING	8 DAYS	9 DAYS
Duret (2°) Brainstem Hemorrhages	37	1
Gyral Flattening	18	0
Uncal Herniation	32	3
Tonsillar Herniation	24	3
Edema Present	35	12
Midline Shift	27	4
Clinically Appeared to be Coning	57	8

Various significant extracranial findings are documented in Table III. In the group of patients dying early, there was frequent evidence of hypertensive heart disease whereas in those dying later, venous thrombosis, pulmonary emboli, pulmonary abscess or empyema, and decubitus ulcers predominated.

Table III. Extracranial Findings

	8 DAYS n = 64	9 DAYS n = 84
Hypertensive Heart Disease	31	26
Aspiration Pneumonia	4	19
Pulmonary Emboli	5	18
Pulmonary Abscess or Empyema	0	7
Peptic Ulcer	8	10
Urocystitis	5	13
Chronic Pyelonephritis	4	5
Acute Pyelonephritis	2	3
Malignancy (any type) (not necessarily fatal)	5	14
Decubitus Ulcers	0	7

Regarding clinical observations, patients who presented with a decreasing level of consciousness (LOC) or decreasing LOC and weakness in one or more limbs were significantly over-represented in the group of patients dying early. Likewise, patients who appeared to be coning before death were more often represented in the group of patients dying before the ninth day.

Discussion

Brown and Glassenberg[5] have suggested that in patients succumbing after stroke, a group dying within the first week of stroke can be distinguished from a group dying after the first week by important differences in the causes of death. They noted that the group dying later died of non-neurlogic causes such as pneumonia, pulmonary embolus, and urinary tract infections, but did not suggested specific modes of death in the early group. The present study clearly suggests that patients in this early group died of causes directly attributable to their stroke (e.g. herniation), and that the late group rarely manifested such causes.

The immediate lethality of cerebral hemorrhage rather than cerebral infarction has been recognized previously[7]. Newbill[10], in 1940, reported that of those patients dying within 24 hours of stroke, patients suffering hemorrhage were over-represented. Eleven of 13 patients dying within 24 hours of stroke, in the present study, suffered hemorrhage rather than infarction. The hemorrhage patients dying early were frequently observed to have severe bleeds that extends into the ventricular of subarachnoid spaces. It is easy to postulate that the immediate lethality of hemorrhage is simply due to a sudden mass effect inside the cranium causing sudden shifts, revealed pathologically as herniation or Duret hemorrhages.

If one were to explain deaths solely on the basis of a sudden mass effect, then one would expect a single peak of early deaths rather than the bimodal distribution apparent from Figure 2. The second peak of early deaths has not been described before, and as such it is interesting to speculate why it occurs. One could hypothesize the following reasons for the second peak: 1) progressive multiple lesions, or 2) a gradual and eventually fatal buildup of cerebral edema by osmotic forces following breakdown of hemorrhagic and necrotic material in the lesion.

One can, however, invoke a new ideas such as "cerebral arrest" or "shock" in the hemorrhage patients. The "cerebral shock" hypothesis suggests that after a prolonged period of attempted compensation to the lesion and its effects, cerebral function is overwhelmed and there is a subsequent decompensation leading to brain herniation and eventually death. It appears as though patients dying from cerebral infarction show a bimodal distribution of early deaths similar to the hemorrhage group, in which case the identical explanation for the second peak of early deaths would apply.

The first hypothesis, namely, multiple discrete lesions leading to death, seems unable to explain the second peak of deaths in either the hemorrhage or infarct groups. Interestingly, it may partially explain the first peak of early deaths in these two groups. Only 1 of the 8 hemorrhage patients dying within the second peak had evidence of multiple hemorrhages whereas, 6 of 24 dying within the time period of the first peak showed multiple hemorrhages. Within the infarct group, only 3 of 13 patients dying between the sixth and ninth day showed multiple infarcts. Nine of 19 patients dying within 5 days of stroke in the infarct group had multiple lesions. Even if a patient had multiple lesions, the present study cannot prove the temporal relationships of each lesion occurring in a patient (they may have occurred sequentially or simultaneously). Despite this, it appears as thought recurrent infarct

and hemorrhage are unable to explain the second peak of early death in either group because a significant number of patients dying during the second peak did not have multiple lesions. However, it may give an acceptable partial explanation for the initial peaks.

Various authors have implicated cerebral edema as a major cause of death from cerebral infarction[1,3,11,13]. Shaw et al [13] showed a negative correlation between the length of survival and the degree of midline shift resulting from swelling of infracted brains in 17 autopsied patients. The prevailing clinical concept that post-infarction cerebral edema becomes maximal at 3 to 7 days is based largely on autopsy studies [3,13] reported in the 1950's, using shifts of midline cerebral structures or increases in brain water content as standards of measurement. Both are now considered as suboptimal criteria [2,4]. In a recent study by Bounds et al[4], it was suggested that when post-infarction cerebral edema results in transtentorial herniation and death, it most often does so within 48 hours.

Thus it remains to be resolved whether the second peak of early deaths observed in both infarct and hemorrhage groups can be explained by a multiple lesion theory, an edema theory, or by the cerebral shock theory proposed in the present study. It could be that a combination of these three theories, with or without other factors may explain the present observations.□

Acknowledgements

This work was undertaken during the summer of 1982 in the Department of Neurosciences at the Sunnybrook Medical Centre under the supervision of Dr. J. W. Norris. Thanks are extended to the Departments of Medical Records and Neurosciences at Sunnybrook as well as to Dr. Norris for their assistance, support, and encouragement. Thanks also go to M.F. for her inspiration.

Dedication

The author dedicates this work to his grandfather who suffered a stroke in 1977, and to the thousand of other people who have been afflicted by stroke.

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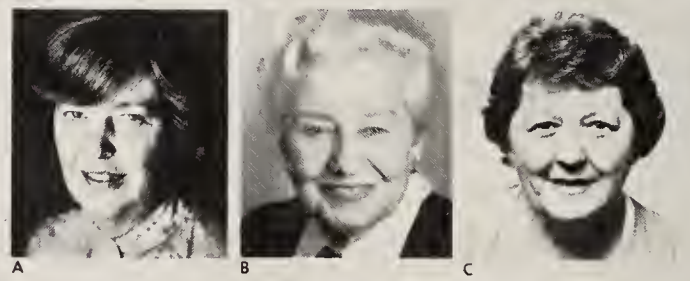

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NEPHROLOGY

Dense Deposit Disease: A Form of Membranoproliferative Glomerulonephritis

Bernard Boulanger ♂T5

Membranoproliferative glomerulonephritis Type II, or dense deposit disease (DDD) is a form of glomerulonephritis which usually begins in childhood. It is characterized by a nephrotic or nephritic syndrome, and progresses rapidly to end-stage renal failure, necessitating dialysis and renal transplantation. The characteristic lesion seen on renal biopsy is a thickening of the glomerular capillary basement membrane due to the deposition of an electron-dense material within the membrane. The immunological profile of most DDD patients includes low levels of serum C_3 and the presence of C_3 nephritic factor (NeF), an IgG auto-antibody which stabilizes the enzyme C_3 convertase of the alternate complement pathway. A minority of patients with DDD follow a benign clinical course and have normal levels of C_3 and no NeF in their serum. In this paper, a typical patient with the progressive form of DDD is presented, followed by a discussion of present knowledge about DDD.

Introduction

Membranoproliferative glomerulonephritis (MPGN) Type II or, dense deposit disease (DDD), was first described in 1962, based on the distinctive appearance of several renal biopsies examined by light and electron microscopy.[1] Dense deposit disease is clinically indistinguishable from MPGN Type I, but differences in morphological appearance can be demonstrated on renal biopsy, as will be pointed out below. The case of a patient who demonstrates the typical clinical, morphological, and immunological features of DDD is featured.

Case Report

In 1979, at the age of 15, E.L. was admitted to The Hospital for Sick Children, Toronto, complaining of facial swelling, decreased urine output, a 20 lb. weight gain, and sore throat. Physical examination showed a pale, tired boy with a blood pressure of 140/85 mm Hg and pitting edema up to the knees. Laboratory investigations showed a Hb of 12.0 g/dl, and a WBC count of 12,600/mm^3; routine examination of the urine for protein demonstrated a 4+ concentration, and microscopic examination revealed numerous RBC's, WBC's and casts. The differential diagnosis at the time included post-streptococcal glomerulonephritis, a collagen-vascular disease involving the kidney, or MPGN. A closed renal biopsy was performed and a diagnosis of MPGN Type II, or DDD, was made (Figs. 1-4). During his stay in hospital, the patient's hypertension and edema increased in spite of therapy. The Hb fell further and the urinary sediment continued to show RBC's, WBC's and casts. The serum creatinine was normal and the total serum protein was 3.9 g/dl. The serum level of C_3 was markedly reduced to 15 mg/dl (normal 90-160 mg/dl). Large amounts of C_3 nephritic factor were present in the serum. The patient failed to respond to hig doses of prednisone and antihypertensive medication, and developed renal failure (BUN of 48 mg/dl and serum creatinine 3.4 mg/dl). He was discharged for Christmas but was re-admitted shortly thereafter with a blood pressure of 180/130 mm Hg, hypertensive retinopathy, and nephrotic syndrome. The Hb was 5.5 g/dl, there was a 4+ protein in the urine, the BUN was 60 mg/dl, and the serum creatinine was 9.0 mg/dl. The patient's left kidney was removed to control his hypertension and urinary protein loss. He was put on chronic ambulatory peritoneal dialysis, a high protein diet, and restricted fluid intake. Renal transplantation was then performed and following a mild rejection episode, the patient's status improved. At present, he comes to the nephrology clinic, shows a normal blood pressure and no edema. His Hb, BUN, and serum are within normal limits. He is receiving prednisone and imuran.

Clinical Aspects

Dense deposit disease affects males and females with an equal frequency and the age of onset is usually in childhood.[2] Patients with DDD most often present with a nephrotic syndrome, hypertension, and a decreased urine output. The urine contains RBC's, WBC's, casts and protein. There is rapid development of renal failure, as exemplified in this case by a ten-fold increase in serum creatinine over a 3-month period. Sometimes, the disease progresses more slowly. Nevertheless, 50% of patients develop terminal renal failure by the tenth year following the onset of the initial symptoms.[3]

Recently, a benign sub-type of DDD has been documented in which patients have normal renal function for long periods of time.[4] These individuals usually are discovered because of asymptomatic proteinuria. Renal biopsy, however, is consistent with DDD. Of 11 DDD patients studied by the author, 3 are following this benign course.

Prednisone (50 mg p.o. on alternate days) has been used in the treatment of DDD. Some patients, as illustrated by this case, fail to respond and it is generally agreed that immunosuppressive therapy is ineffective.[2] When renal failure ultimately develops, patients must be dialyzed and/or undergo renal transplantation. If a renal transplant is performed, there is a 100% recurrence rate of DDD in the donor kidney, most often within the first year following the allograft procedure.[5]

In the past, it was felt that a streptococcal infection was the cause of DDD, but this view is no longer favoured.[6] It is interesting to note that the patient in this case had a sore throat prior to the onset of his kidney disease. It is not unusual for DDD to be diagnosed as post-infectious glomerulonephritis prior to histological examination of the renal biopsy.[4]

Morphology

Light, immunofluorescence, and electron microscopic examination of this patient's renal biopsy demonstrated the characteristic features of DDD[2] (Table I and Figs. 1-4). In the glomeruli, there was endothelial and mesangial cell proliferation and an increase in the amount of mesangial matrix. This has the effect of obstructing the glomerular capillaries and of producing a lobular glomerular configuration. Epithelial cell proliferation leads to the formation of crescents, the size and number of which are related to the severity of the clinical illness. The glomerular capillary basement membranes (GCBM) were markedly thickened, as was evident on routine histological staining. Immunofluorescence showed C_3 deposition along the GCBM and in the mesangial regions. No immunoglobulins were present. Fibrin was seen in the epithelial crescents. By electron microscopy, the foot processes of visceral epithelial cells were noted to be fused, as in other renal diseases in which a nephrotic syndrome is present. An almost linear, electron-dense intramembranous deposit was seen in the GCBM and to a lesser degree in Bowman's capsule, the renal tubular basement membrane, and in the arteriolar basement membrane. The GCBM, normally 350 nm thick, was swollen to between 500 and 4,000 nm. The deposits, apparently originating in the lamina densa portion of the basement membrane, lacked an organized structure, and were rather fibrillar.

Table I. Morphological Characteristics of DDD

1. Thickened glomerular capillary basement membranes.
2. Mesangial and endothelial hypercellularity.
3. Inflammatory region.
4. Glomerular crescents.
5. Tubular atrophy nad interstitial fibrosis.
6. Glomerular C_3 deposition.
7. Electron-dense, intramembranous deposits in the glomerular capillary basement membranes.

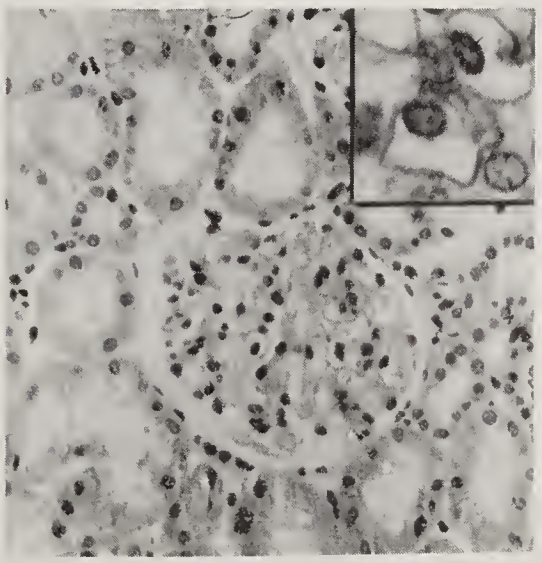

Figure 1 Light micrograph showing a normal glomerulus (Mag. 340 x). Note the thickness of the glomerular capillary basement membranes (inset). (Mag. 1560 x)

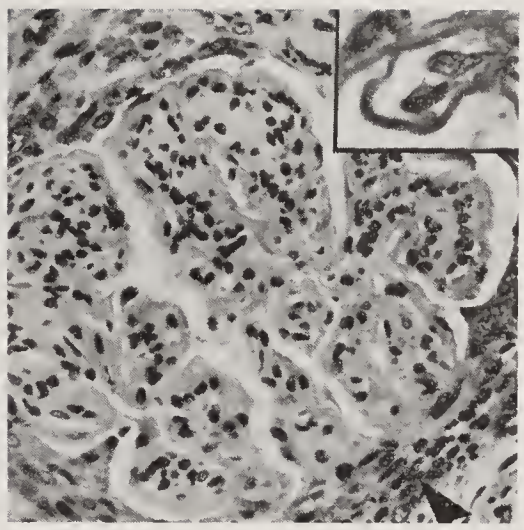

Figure 2 Light micrograph of the patient's renal biopsy (Mag. 476 x). Shown is an enlarged glomerulus with a lobular configuration. There is marked endothelial and mesangial cell proliferation and an increase in mesangial matrix. Most of the capillaries have been compressed and their lumens are occluded. The arrow points to a cellular crescent. Note the markedly thickened glomerular capillary basement membrane (inset) (Mag. 1,600 x)

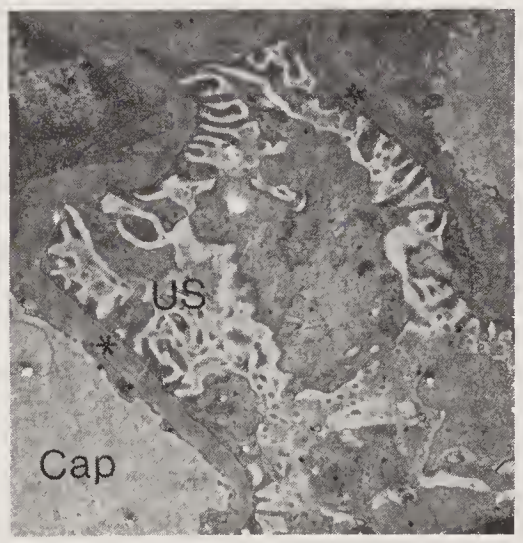

Figure 3 Electron micrograph of a portion of glomerulus from normal human kidney, showing the normal thickness and electron-density of glomerular capillary basement membrane (asterisks). CAP — capillary lumne, US — urinary space (Mag. 10,270 x)

Figure 4 Electron micrograph of a portion of glomerulus from the patient's renal biopsy. Shown are portions of three thickened glomerular capillaries separated by a urinary space. Dense deposits (asterisks) are present in the glomerular capillary basement membranes of all three capillaries. (Mag. 8,736 x)

MPGN Type II has a distinctly different morphological appearance from MPGN Type I.[7] In MPGN Type I, the GCBM are split rather than thickened, and mesangial cells interpose between the two leaves of the basement membrane. Immunofluorescence shows both immunoglobulins and complement in mesangial regions and along the GCBM. Electron-dense deposits are seen by electron microscopy in the subendothelial portion of the GCBM. Although the renal biopsy findings may differ, patients with MPGN Types I and II often show similar clinical pictures.[7]

Recently, it has been shown that dense deposits, similar to those seen in the glomeruli, are present in splenic sinusoidal basement membranes of patients with DDD, thus emphasizing the systemic nature of this disease.[4] Deposits very similar to those seen in DDD may also be seen in the kidneys of patients with pneumococcal, streptococcal, monilial, and tuberculous infections.

Immunology

It has been suggested that the formation of dense deposits in the GCBM of DDD patients may have an immunological basis.[3] Sera from these patients contains a component called C_3 nephritic factor (NeF), which is an IgG auto-antibody directed against the enzyme C_3 convertase of the alternate complement pathway[3] (Fig. 5). This component, therefore, continually activates the alternate complement pathway by stabilizing C_3 convertase, allowing this enzyme to act unopposed for long periods of time. Consequently C_3 is continually degraded, resulting in markedly low levels of this complement component. NeF is of extra-renal origin, since it persists in DDD patients following bilateral nephrectomy.[8] A number of other studies have shown that there is decreased synthesis of C_3 in DDD[3]. The normal levels of C_1 and C_4, and the decrease in factor B in DDD sera reinforce the notion that activation of the alternate, and not the classical complement pathway prevails in DDD. It should be noted that DDD patients following a benign clinical course have normal levels of C_3 and very low amounts of NeF in their sera.[4]

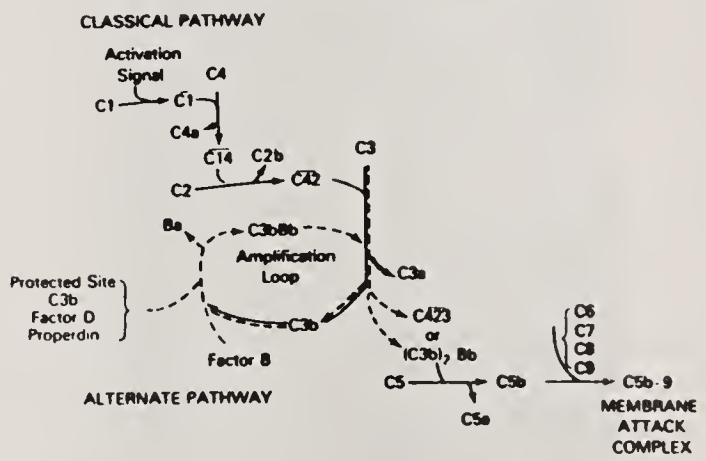

Figure 5 A General Scheme of Complement Activation
The classical pathway is depicted with solid arrows; the alternate pathway is depicted with dashed arrows. C_3 nephritic factor binds to and stabilizes C_3 convertase which initiates the alternate pathway (From Brown, E.J., and Frank M.M.: Complement Activation. *Immunology Today*, July 1981).

Pathogeneis of DDD

Most glomerular diseases are caused by the deposition of immune complexes in the glomeruli, with activation of the complement system and the ensuing inflammatory reaction.[9] In DDD, immunofluorescence studies using anti-Ig antibodies indicate that immune complexes are not present in the glomeruli. In addition, elution of isolated GCBM of DDD kidneys has failed to demonstrate the presence of any immune complexes.[3]

The biochemical composition of the dense deposit material is very similar to that of normal GCBM, the only difference being a decrease in cystine and an increase in sialic acid. The alteration in cystine content may indicate a disruption of disulfide bonds. Hence, the three-dimensional structure of the GCBM in DDD would be affected, accounting for the altered appearance of the dense deposit material under the electron microscope. This has led some investigators to conclude that dense deposit material is not a deposit but rather an alteration of the basement membrane itself.[5]

Conclusion

Much research has been done to ensure that a diagnosis of DDD can be made on clinical, immunological, and morphological grounds. The presence of NeF in the serum of DDD patients has led investigators to consider the possibility that a disorder of the immune system is somehow responsible for DDD. The author has been involved in ongoing work to detect functional and morphological defects in the B or T lymphocyte subsets of DDD patients. It is only through the combined efforts of many researchers that the pathogenesis of this disease will be uncovered. □

Acknowledgements

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TRANSPLANTATION SURGERY

Advances in Canine Small Bowel Transplantation Using Cyclosporin A as an Immunosuppressant

David M. Finkelstein 8T5

Prior to the discovery of Cyclosporin A (CYA), experimental and clinical attempts to transplant sections of small intestine have met with disappointing results. CYA has proven to significantly prolong mean survival time of allotransplanted intestine in the dog and has stimulated a renewal of research in this field. Recent work in small bowel transplantation and the relevance of CYA is reviewed in this article.

The technique of small bowel transplantation was developed by R. Lillehei and co-workers in the 1950's.[1] Resection of the small bowel in dogs and transplantation back into the same animal (autotransplantation) led to indefinite autograft survival[2]. Unfortunately, transplanting bowels from one animal to another (allotransplantation) invariably led to either death of the graft or of the recipient within 7 to 12 days time[3]. The reason is that the small bowel seems to be a vigorous immunostimulant due to the large number of immunocompetent cells in the lymphoid tissue it contains. Thus a nidus for the initiation of graft versus host diseases (GVHD) is inherent in every bowel transplant. The cause of death in allotransplanted dogs, when not attributable to technical problems, is invariably rejection, GVHD, or both[2 4]. Various attempts at immunosuppression including high dose prednisone and azathioprine have only prolonged survival marginally.[1]

CYA was first described by Borel in 1976. A cyclic endecapeptide of molecular weight 1,203 daltons, CYA is derived from the fermentation broth of the fungi *Cylindrocarpon lucidum SSp. Booth* and *Tricoderma polysporum SSp. Rifai.* As was the case many times in the history of medical research, CYA's remarkable immunosuppressive properties were discovered "by accident" during a routine survey of compounds being investigated for possible antibiotic effects.[5]

CYA has a predominant action on T-cells and appears to exerts its effects in the early recognition of the antigen and in the early transformation of cytotoxic T-lymphocytes following allogenic stimulation. Suppression is achieved by the prevention of acquisition of responsiveness to a growth factor by the T-lymphocyte.[6] B-lymphocytes seem to be less affected; thus, this mode of action would from a theoretical point of view improve the treated organism's ability to combat bacterial infections and therefore be of particular benefit in transplantation of the intestine.

Early Results of Transplantation

Total small intestinal transplantation in the dog has been studied since 1974 at the University of Toronto. The technique used in these experiments is as follows: Immunologically unmatched pairs of dogs of about equal weight are used. Donor and recipient are pretreated with a non-absorbable antibiotic (neomycin 0.5 gm p.o.) as a bowel prep. At surgery the donor is operated upon first and the total small intestine is removed on its vascular pedicle consisting of the superior mesenteric artery and vein. The vascular bed of the graft is then perfused with 1 litre of Ringer's lactate with heparin at 4°C. The intestine of the recipient is removed using a similar technique and the graft is positioned in the abdominal cavity of the recipient. The superior mesenteric artery is anastomosed to the abdominal aorta and the superior mesenteric vein to the inferior vena cava just below the renal vasculature, both anastomoses being of the end-to-side variety. The continuity of the intestinal tract is then restored by a proximal and distal end-to-end anastomosis. As a further development of the technique short segments of the two ends of the graft are isolated on vascular pedicles, closed in one end, and brought out to the skin as stomas. By using this additional technique, the graft is easily accessible from the skin for histological and physiological studies (Fig. 1).

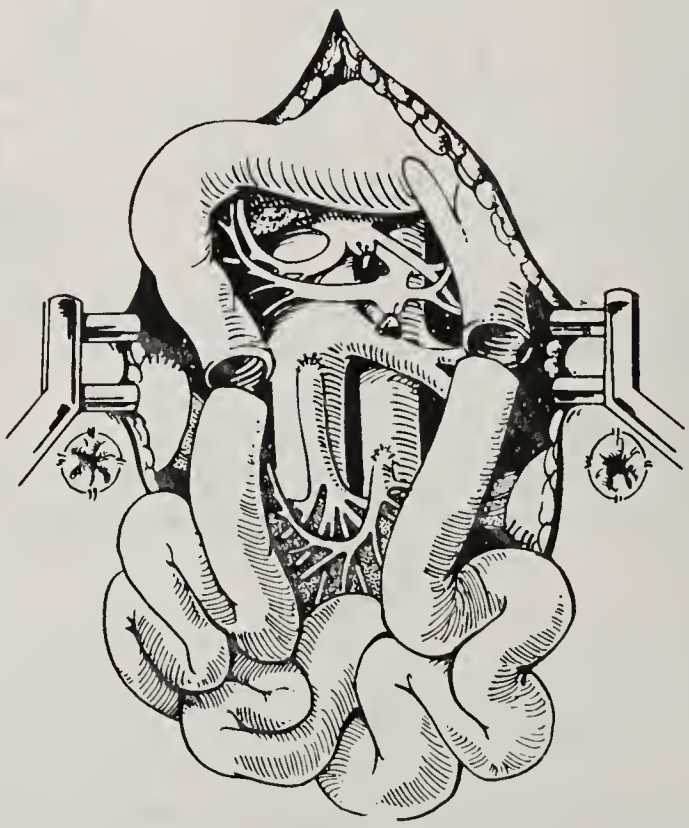

FIGURE 1. Surgical Technique Utilized in Small Bowel Transplantation. Note isolated intestinal segments brought out as cutaneous stomas for easy histological and physiological monitoring.

CYA was introduced to Toronto in 1979 and rekindled interest in small bowel transplantation. In an initial study the effects of CYA on graft survival was tested[7,8]. Eleven dogs were treated with CYA 25 mg/kg i.m. for one month and then switched to oral doses, 13 dogs were treated with the same oral dose of the drug starting immediately post-operatively, and 10 dogs served as controls and were not immunosuppressed. The mean survival of the parenterally treated dogs was 103 days with the longest survivor living 432 days, the longest survival time reported up to date in the field. The three longest survivors (200, 203, and 432 days) all died from rejection following decreasing plasma levels of CYA which at that time was given orally. The dogs that received Cyclsoporin A orally alone had a mean survival of 31 days and the control dogs 12.5 days (Fig. 2). Most of the dogs in the latter two groups died of rejection.

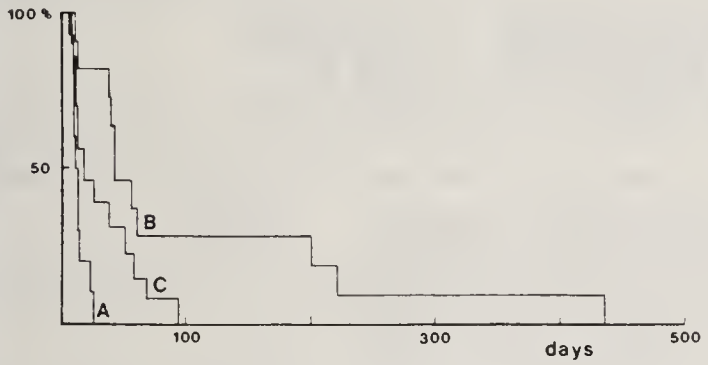

FIGURE 2. % Survival After Small Bowel Transplantation
Group A: Untreated Controls
Group B: Treated with CYA 25 mg/kg i.m. for 1 month, then switched to p.o. administration.
Group C: Treated with CYA 25 mg/kg p.o. from 1st day postoperatively

The results of the initial study clearly demonstrate that oral administration of CYA alone does not provide the animals with adequate immunosuppression. However, further experiments on the absorption of CYA from the small intestine in transplanted dogs have shown that the drug is in fact absorbed, and that oral administration is possible after the immediate post-transplant period provided plasma levels are maintained[11]. Sandoz Ltd., the company that manufactures CYA, has recently developed a new solvent that allows for convenient i.m. and even i.v. administration of the drug. This new form will help overcome current problems in administering this substance, which is totally insoluble in water.

Histological Monitoring of the Graft

These encouraging results spurred further work in the field, and in a second set of experiments the above mentioned technique of isolated pouches was developed and used in two groups of allotransplanted dogs. One group received CYA in a suboptimal dose, and a control group was not immunosuppressed. Biopsies from the isolated pouches were obtained daily and plasma levels of CYA after oral administration were measured. Histological changes indicating allograft rejection were noted about three days before death in the control animals and 4 to 5 days in the dogs treated suboptimally with CYA.

The histological sequence of events in rejection of the allografted small intestine was documented in this study. Rejection was classified as a sequence of events, which follow a predictable order: Fig. 3 shows the normal canine small bowel mucosa. Fig. 4 demonstrates the earliest sign of rejection which is blunting of the mucosal villi. Fig. 5 reveals rejection at a more advanced stage, the most predominant feature being a markedly increased monocellular infiltrate consisting mainly of lymphocytes and plasma cells. Finally, Fig. 6 demonstrates end stage rejection with complete necrosis and sloughing of the mucosa. It was concluded from the study that the technique of histological monitoring using biopsies from isolated pouches is helpful in the early diagnosis of rejection[9,10].

FIGURE 3. Normal canine small intestine

FIGURE 4. Blunting of the mucosal villi

FIGURE 5. Increased monocellular infiltrate

FIGURE 6. End stage rejection showing sloughing of the mucosa and hemorrhagic necrosis.

The current protocol invovles the development of other convenient and reliable methods of monitoring the graft. Histological findings in biopsies from the isolated pouches are correlated to various other parameters under study. Uptake of ^{14}C-labelled glucose from the jejunal isolated pouch is being investigated, as is the plasma level of a gut specific enzyme, diamine oxidase. Although results are still being collected in these studies, preliminary data suggest that both of these monitors may play an important role in investigating intestinal rejection.

Human Intestinal Transplantation

Seven cases of human intestinal transplantation have been reported [1,12]. Major surgical complications and rejection limited the results in all of those, and in no instance was any graft function obtained. With the advent of CYA as a means of immunosuppression it seems reasonable to suppose that this drug may be an important factor in new attempts to perform clinical small intestinal transplantation, especially in the light of successes with CYA in renal and cardiac transplants. The need certainly exists: each year numerous patients with short bowel syndrome, mainly due to massive bowel infarction secondary to atheroslerosis, die for want of a functioning bowel. While it is true that the increased sophistication of Home Total Parenteral Nutrition (TPN) programs allow many patients to lead full and productive lives, complications of Home TPN preclude its widespread use as a therapeutic modality. Perhaps someday in the future TPN and small intestinal transplantation could be used in a complementary fashion, much as renal dialysis and renal transplantation coexist today. □

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GENETIC COUNSELLING

Genetic Counselling and the Psychological Implications for the Counsultees

Michael W.K. Chan 8T3*

Although this article deals specifically with genetic counselling, most of it can be applied to other areas of physical and mental dysfunction (e.g. the family with the traumatic spinal cord-injured son, or the one with a teenaged daughter who is anorexic). Furthermore, it is sincerely hoped that the reader will find some of the points presented here worthwhile to bear in mind in his/her clinical practice.

Genetic counselling can be a very frightening topic. It tends to conjure up in the minds of the general public pictures of misshapened bodies and/or mentally inept children. Genetic counselling may be loosely defined as being another aspect of clinical medicine, in which one gives advice about the possible occurrence of a specific disease due to some genetic defect, or estimates the risk of having another affected child within a family with a positive history. Another important role of genetic counselling is that of alerting the medical attendants to such a possibility.

Genetic counselling has been recently brought into the forefront of public concern by many significant advances in medical technology, especially in the area of cytogenetics. Along with these advances, those of contraception, sterilization, and artificial insemination have also kept up on par. It is therefore the responsibility of the counsellor to inform the counsultees of these options. Often a couple may not wish to have further children as a result of the information given to them, or in dominantly inherited defects, artificial insemination may be a viable alternative if the couple desires to be parents but does not wish to adopt.

The counselling should be conducted in a calm and relaxed atmosphere, and there should be no coercion on the part of the counsellor. He/she should provide as much information, alternatives, and support as is needed to enable the couple to reach a decision that is appropriate for them. Curt Stern (1973) has written that, "It is not sufficient to tell the truth; it is necessary to tell the truth humanely."[1] Author Patricia Kelly goes one step further. She strongly believes that the truth should not only be told humanely, but that it should also be understood. Unless proper counselling skills are employed to overcome the many barriers of communication, the counsultees will not adequately understand the information being presented to them no matter how humanely it is presented.

As a member of the health profession, and with due acknowledgement of the essential skills of a good clinician, it is the author's opinion that many institutions are turning out more technicians than clinicians. A good technician is one who knows the facts and who has the inductive and deductive skills to assemble data together to arrive at an educated conclusion. But when dealing with people, it takes a good clinician to make use of all the information and data, and to present them in a fashion that is understandable to others, even if they are not in the field. In Occupational Therapy this skill is considered as part of the 'therapeutic use of self'. A quote from F.C. Fraser (1974) will further illustrate this point: "Exploring these feelings [about the birth of a child with a defect] may be far more important than providing a statistical estimate of the risk, and somewhere during the counselling process there should be an opportunity to do so, but in practice this aspect of counselling tends to be neglected."[2] It is sincerely believed that any proper counselling would be prone to failure if the psychological aspects are not taken into consideration at every step of consultation.

There have been many approaches to genetic counselling, ranging from a single individual in a private setting to the multiple-interview, multidisciplinary process. Each has its own merits and shortcomings. In the multidisciplinary approach, the counsultees will receive the benefits of the skills of a wide variety of professionals. But it may prove to be too tramuatic and upsetting for the counsultees to be passed from hand to hand, especially when they are already in a state of emotional turmoil before coming for consultation. With the other approach, they will receive the more intimate and personalized treatment from a single counsellor, and will better have the opportunity to establish a good rapport and confidence with the counsellor. But on the other hand, it would be very difficult if not impossible for a single counsellor in a private practice to provide immediate and accurate service without the aid of other profesionals. Thus, with the interest of the counsultees in mind, the best tactic would be an amalgamation of the two approaches: i.e. a single counsellor working within a centre which can provide the skills of a large variety of professionals. (In fact, the National Genetic Foundation has linked 46 of the leading medical institutions throughout the United States and Canada into a dynamic, collaborative network of 'Genetic Counselling and Treatment Centres' that provide what is undoubtedly the greatest competence in genetic disorder therapy available in the world today. A central referral system directs patients or physicians to the appropriate centre.)[3]

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Often when the counsultees arrive at the counsellor's office, they may already have some apprehensions about the meeting, especially if they have been hoarding myths and misinformations in the back of their minds. There, they receive a great deal of new and possibly confusing information on top of the emotional burden they already have. All these factors will only serve to create further barriers to counselling. In many cases, counsultees — even those with average or higher than average intelligence — rarely have a working knowledge of human genetics or hereditary diseases, and an unwary counsellor may interpret the hesitations and uncertainties as being unresponsiveness and non-cooperation. Furthermore, the counsultees themselves may have suffered some form of genetic disorder which may have affected their intelligence, and this will have to be recognized in the communication process.

There are a number of other obstacles that will prevent the counsultees from fully understanding and applying the information received to their situation. Fear, denial, guilt, anger, and a sense of stigma must be reduced to a manageable proportion before the consultees can rationally plan for the future. Here I will briefly discuss some of the more common psychological obstacles counsellors are faced with.

Fear: Research has shown that there is usually a two to five year interval between the decision to seek counselling and the actual call for an appointment.[4] People delay a counselling appointment for many reasons, among them are the fear of what they might be told, denial that there is a problem, or just plain embarrassment.

Denial: Denial can take a number of forms. Some of them can be quite extreme, as illustrated in the following case:

> "A father sits happily holding his severely retarded five-year-old son who is unable to walk, stand or sit unaided. The child cannot speak and he has repetitive myoclonic seizures. The child's mother devotes her full time to exquisitely detailed care of the boy, neglecting her seven-year-old daughter who is rebellious and in danger of dropping out of school. The father, when asked about the son, says cheerfully, 'Fred is such a good little fellow, we'd like to have another one just like him.' ...[5]

Other forms of denial may be one of doubting the counsellor's expertise, or that the disease is not as serious as the counsellor suggests, or that the child will grow out of it eventually. But at times, such an attitude can also make it possible for the individuals to carry on bravely and cheerfully despite the burden of the afflictions. Also, individuals frequently express both denial and acceptance simultaneously:

> "A young father whose infant son had Down's Syndrome denied that there was anything wrong with his son. In the same session he expressed keen interest in enrichment activities for his child, such as Early Infant Stimulation program. Instead of confrontig this father with his contradictory statements and obvious denial, the counsellor acknowledged the man's desire to do all he could for his son, and recognized that, like many parents, he wanted his son to excell. In later counselling sessions, this father proudly told how much more his son could do 'than most Down's kids ..."[6]

Guilt: Parents often verbalize the belief that they might have caused the child's abnormality and they continuously cast about in their memories, looking for some incident to fasten onto as the cause. Feelings of guilt may arise because the mother smoked, was overweight, or initially did not want the baby. A father may worry about the defect being related to a previous venereal disease. Usually such speculations are raised in a cautious, embarrassed manner with an apologetic laugh, sometimes not until the second or third visit.[7] It is crucial that the counsellor try to relieve the parents' anxiety and guilt, especially if there is a known genetic carrier, or cause. In cases where the diagnosis may be uncertain, helping the parents to gain mastery in the face of the disorder is a major consideration.

Anger: Couples whose child has died or who have recently learned of a genetic disorder are often angry. Many would have problems dealing with this strong emotion as their anger seems to have no direction. They don't know where to vent their anger. Some become angry with themselves, others who are religious may become angry with God. The counsellor will need to help the counsultees to deal with and reduce the anger before proceeding.

Stigma: Individuals who seek counselling may have some form of abnormality themselves. Thus they may feel stigmatized in that they are not as good as others or that others see them as being inferior. Information may be misinterpreted as insults, and questions as prying.

Blame: Sometimes, instead of looking within for the cause of the child's defects, a parent may look towards the other partner or even to a relative, e.g. mother-in-law. Blaming, or the fear of being blamed sometimes keeps individuals from asking questions or being receptive to help from the counsellor. Thus it is important for the counsellor to try to keep the communication lines open.

Effects on Siblings: It would be a serious neglect not to include the effects of a defective child on the other siblings. Although cases in the past have indicated that it was the child with Downs' syndrome who taught his brothers and sisters what "love" really is, and that the experience was a rewarding lesson in tolerance and self-sacrifice.[8] But not all stories have such a happy ending. Normal children can be cruel to each other at play, and towards defective children, playmates can be even more cruel, even though cruelty per se is not meant. Normal children, when they learn that their brother's disease was inherited, may feel that they too may be defective in some way. Other children may fall into the trap of guilt by saying that they should be the one who is affected, and not their innocent little brother. Also, the emotional stress, the financial burden, the social stigma, and the curtailment of family activities are bound to have serious effects on the psychodynamic development of all the family members.[9]

I have only managed to present the tip of the iceberg, and there are still many neglected areas in day-to-day counselling. It is with greater social awareness, that families affected by this unfortunate game of Russian roulette of nature can find help and support from the health profession that will carry them over the initial crisis and which will lead them to cope with it for the rest of their lives. Occupational Therapists working in pediatrics and other related areas can play a very important and necessary role in achieving this goal. Society too, must be educated and made aware of the implications so

that the victims and their families may be spared the psychological stresses that have been unnecessarily imposed upon them by the outside world.□

Footnotes

1. Kelly, Patricia T., *Dealing with Dilemma — A Manual for Genetic Counsellors* G.W. Hooper Foundation, University of California, San Francisco, 3, 1977.
2. ibid. pg. 1.
3. Stine, Gerald James, *Biosocial Genetics — Human Heredity & Social Issues*, MacMillan Publishing Co., Inc., New York, 439, 1977.
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THE FINAL WORD

Getting It

by Harley Hahn 8T4

"Whenever you read anything you always read sexual thoughts into it even if it's the Canadian Constitution. Don't worry about the title Harley. Everyone will understand what your article is about."

Michael Dan
editor, U. of T. Medical Journal

A hand for each hand was planned for the world
Why don't my findgers reach
Millions of grains of sand in the world
Why such a lonely beach
Where is a vioce to answer mine back
Where are two shoes to click to my clack?

Mr. Magoo's A Christmas Carol

Why is it so difficult for you to find someone special for yourself? There are so many people from whom to choose and moreover, many of them are lonely and would like to find someone, just as you would. You may not be perfect, but then neither is anyone else (especially your friend Dick/-Jane who seems to make out so well). When it comes to finding and keeping a mate, what is it that gives most people such difficulty? And what can *you* do about it? *What works?*

Let me begin by posing and elaborating on the central questions: What is *it* that you want, why do you want *it*, and why is *it* so difficult to get?

We all have basic social needs. One way to describe these needs is to artifically divide them into two categories: sexual needs and non-sexual needs. The sexual needs are satisfied by certain types of pleasure. They tend to require physical contact. The most important way that we satisfy our sexual needs is by sexual intercourse. However, these needs are complex — they cannot be satisfied only by intercourse and it is certainly possible to satisfy them without traditional sexual relations. (See Jack Pollock's article in this issue on *Sex and Fantasy*.) The important thing to realize is that sexual pleasure is only one type of demand that we put on a mate.

The other type of demand involves non-sexual needs. We have many non-sexual requirements, food, shelter, satisfying work, but the ones that I wish you to think about are those that can only be met in a special way by a special person. These needs tend to be emotional and logistical and involve sharing — sharing responsibilities, possessions, feelings and experiences.

Alhough the sexual and non-sexual needs are very different, we are happiest when a friend can satisfy us (at least partially) in both these areas. Truly, we are asking much of such a friend. (Conversely, we can give much.) In order for this to occur we require intimacy.

Now intimacy comes in several flavours. For instance, the doctor-patient relationship is an intimate one. But the kind of intimacy that we need to be able to satisfy these basic social needs is different. It is difficult to define precisely, but perhaps I can capture its essence by describing it as a dialogue which is characterized by two polarities: trust-vulnerability and give-take. The first polarity involves a feeling of safety. We need to feel so safe that we are vulnerable to both physical and emotional attack. In order to do this, we must trust the other person not to hurt us. Give-take involves giving in a wide sense. We demand both concrete gifts and those of a more ethereal value such as a kind word, a hug, or a feeling of closeness. And because we require the cooperation of another person, we must learn to give such gifts and to take the same in such a way as to bring pleasure to the other person.

So, by *getting it* I refer to acquiring a sense of intimacy involving a trust-vulnerability, give-take dialogue with another person.

Before proceeding, I want to define three terms that I will use to refer to people: Individual, Group and Couple. Individual refers to a single person. Group refers to a set of two or more people in which the needs of the whole are considered to be more important than the needs of the separate people. The definition of a Couple is two people for whom it is important to satisfy both their sets of social needs that cannot be met by a Group. Of these three organizations, it is only the Couple that requires intimacy to satisfy its needs.

But our need for intimacy is not as simple as you might think. First of all, why do we have such a need? We know that some animals require a Group to survive — the examples of a hive of bees and a colony of ants spring to mind. There are also animals such as wolves, that live best with a Couple and others, such as cats, that seem to prefer life as an Individual. Perhaps it is not unexpected that humans, being the most complicated animals have the most complicated needs. We seem to require both Groups and Couples as well as a strong indentity as an Indivudal, in order to thrive. A few moments of analysis and introspection will give you an appreciation of the usefulness of a Group and an Indiviudal respectively, but the benefits of associating as a Couple are more subtle.

The important advantages of a Group accrue from specialization and the sharing of resonsiblities. Some of the benefits of a Couple are also of a logistical nature, for example, the sharing of living expenses and of accommodation, and a division of labor with respect to childrearing. However, remember that in a Couple the needs of each person are not subjugated to the needs of the whole. Thus, we have the most important advantage of a Couple: the opportunity for the people to cooperate in satisfying one another's *personal* needs — the needs that could not be met by a Group or by an Individual alone. Two people can scratch one another's back. and it is the inherent objectivity of a Couple that allows us to scratch in just that place that the other person could not reach by himself.

In an emotional sense this translates into a Couple being able to provide comfort, company, and combined strengths that make up for individual weaknesses. Perhaps you are good at making up a budget, while I am good at dealing with tax forms. So you can plan our financial affairs and every April I can settle up with the government for both of us.

This inherent objectivity also provides important physical advantages, especially when it comes to sex and affection. The members of a Couple can pleasure each others in ways that they can't do separately. This affords them two special types of experience: that of being stimulated, and that of stimulating another person. If the Couple is a male-female one, it allows the persons to contact the opposite sides of their sexuality, through both direct and vicarious experience. It is satisfying to be able to explore those parts of ourselves that we are usually forced to neglect due to stereotyped sex roles.

We see then, that one of the reasons that we seek *it* — the imtimacy — is that is allows us to form Couples which affords us important considerations not offered by a Group or by an Individual.

There are also reasons that are not so obvious but perhaps even more profound. These are our unconscious motivations. Bonding as Couples allow us a socially acceptable and productive way to take possession of our mother or father unconsciously. When we choose a mate, we can consider it an attempt to satisfy our long repressed, but not forgotten, desire to possess and perhaps even merge with our parent of the opposite sex. It is possible that our culture's long-standing worship of marital fidelity has its roots in the selfish desires of infantile possession. (Within this paradigm, coupling with a member of the same sex can be interpreted as a narcissistic desire to bond with one's self.) These bonding needs find expression in many of our customs which specifically endorse the male-female Coupled way of life.

I said earlier that our need for intimacy is a complicated one and certainly our examination of why we need intimacy proved this to be so. We can appreciate the complexity in another way if we answer the question: Why is such intimacy difficult to obtain?

The difficulty in finding Couple-intimacy can be understood as following from certain aspects of the nature of the Individual and the Group; each Couple involves two Indiviudals, and these Individuals must first meet and interact with one another as members of a Group.

Here are three axioms which describe your basic social needs.

AXIOM #1: You need to be alone.
AXIOM #2: You need to be with other people.
AXIOM #3: No one person can completely satisfy need #2 for you.

These observations about the Individual imply two reasons why people have difficulty finding and maintaining intimacy. One reason is that axioms #1 and #2 are contradictory; hence, people must always be balancing their needs to be alone and with others. Often, problems are created when two people do not accept that being alone and being together are both necessary.

Axiom #3 explains the second difficulty. As I explained above, a Couple provides numerous functions. However, people have a complexity and robustness that demands intimate contact with more than one person; that is to say, one must be simultaneously part of a number of Couples. Ideally, one of these couples will be a particularly intimate one, while the others will be a variety of superficial and close friendships.

These demands give rise to two common problems. A person may maintain only one very intimate Couple and neglect to form and enjoy other friendships. Conversely, a person may have sufficient friends but may lack the special one with which he might form a very intimate Couple. Frequently, two people feel such a strong need for this intimacy, that they form an unhealthy, clinging, emotionally-dependent Couple with one another which effectively trades one problem for another. Just as frequently, the emotional dependence is one-sided, putting difficult demands on both persons and straining the Couple as a whole. Often these problems stem from life-long attitudes and expectations which are incorporated into a person's social habits. The result can be years of chronic dissatisfaction.

But it is not only the basic nature of the Individual which causes difficulty in finding intimacy. The basic nature of the Group is also to blame.

As I mentioned earlier, a group is characterized by holding the needs of the whole to be more important than the needs of the Individual. All Groups have many purposes. Sometimes they are elaborated as a set of particular goals; more often, they are not in any way articulated and must be inferred by the behaviour of the Group. This is especially true of the group that one spends much of one's time with — namely the Group of people who live in the same area as oneself. Because Groups are concerned with their own interests, they often adopt conventions and morals that are not directly sympathetic with Indiviudal needs.

One such convention is the facade that each other Individual maintains when, as a member of a Group, he interacts with other members of the Group. This facade is important as it allows a person to protect vulnerable parts of himself from other members of the Group. Unfortunatley, a facade also prevents a person from displaying the best parts of himself. For the good of the group people act in certain, well-defined ways, and unfortunately, those ways are not conducive to Individuals meeting one another in such a way as to establish the beginnings of intimacy. If you have ever tried to act intimately with a stranger on a bus or in a supermarket you will have found out how strict the conventions of the Group can be. The mask that we all must wear on such occasions, and the behavior that we must demonstrate proves to be another difficulty for a person who seeks intimacy.

Now that we have discussed the importance of intimacy in helping to satisfy our basic social needs, and why it is difficult to achieve such intimacy, let us turn our attention to how you can help yourself to overcome these difficulties.

Of all the variables involved with your interactions of other people, the most important is your personality — that is, how you act and how you react. In order to find someone with whom you can establish a special intimate Couple, you will need to get to know many people. Conversely, you will have to meet many people before you will find one who will want to pick you out of the crowd.

Success in both finding and being found requires certain characteristics. To the extent that you can demonstrate these traits, you will be successful. Here is a list:[1]

- flexibility
- tact
- empathy
- sympathy
- the ability to ask for what you want
- the ability to give
- the ability to take
- patience
- good manners
- sex appeal

This is not a list for glibly passing over. This is a list for contemplating. Each personality trait is important in a different way, but there is not one of them that cannot be cultivated.

I am sure that you would agree that your version of an ideal mate would boast all these qualities. But are you prepared to offer yourself in this way to other people? There are so many people who are waiting and waiting for their perfect prince/-princess to come along. But if they were to take an honest look in the mirror they would have to admit that even if their perfect dream-person existed, would he/she be likely to want them? We all know that a clean, shiny,well-running sports car will command a better price than a beat-up, broken-down jalopy. It is astonishing how many people won't even think of improving their personality. Instead they just complain about how lonely the are and about how they meet only jerky people.

But I don't pretend that if you haven't already got these personality traits they will be easy to develop. On the contrary, they will take effort, perseverance, and time. You must develop you abilities to make and break habits, and then mold yourself as you see fit.[2] You will also find it useful to associate with people whose characteristics you admire (if they will have you).

The skill of making a good first impression will allow you to meet and to get to know a wide selection of people. Clearly, this is helpful. There are two traits that are particularly important when meeting people. If you chose to ignore the list that I gave you above, at least pay attention to these two. They will do more for you than all the King's horses and all the King's men.

And they are: flexibility and sex appeal.

Flexibility involves two complimentary qualities. The ability to be at home with various kinds of people and various kinds of situations, and the ability to understand another's point of view. These skills are acquired in the straightforward manner of experiencing and learning from a large number of environments.

If you want to develop flexibility then you must go out of your way to experience different settings and customs. You must travel to places that are different from what you are accustomed to. And when you are at home, you must involve yourself in activities that are foreign to your habits. Unfortuately, if you are like most people, you will be scared of a strange place, a strange language, and strange people. Do it anyway. You will only overcome your fears by confronting them. You will find that most of your chains are made of paper.

You have to try. The next time you take a vacation, pass over that tourist resort. Go to a place where the culture and language are different from your own and try to figure out what's going on. You were born into a particular culture, family, religion, by accident. That is no excuse for not finding out what is going on in the rest of the world. The old saw about people being the same everywhere is only true through the eyes of biochemists and experimental psychologists.

However, developing flexibility does not comes only from exposure to different places and people. It comes from learning from your experience. And learning can only take place if your present skills are stressed in such a way that you develop new ones.

If you are travelling for this type of experience then go alone — even if you are a woman. (Especially if you are a woman). Leave behind your family, friends and old habits. If you can't afford a long trip half-way around the world, then save up for a weekend in a place close by. I know that it sounds difficult. You may have never gone anywhere new by yourself. It's understandable that you are scared. Do it anyway. I know that your friends and especially your family will tell you not to travel by yourself. Do it anyway. If this seems a long way from attracting intimacy into your life, you will be pleasantly surprised.

I mentioned that the second important characteristic for making a good first impression is sex appeal. It is interesting that most people think that they are not good-looking. And almost nobody thinks that he/she is sexy. When it comes to importance, sex is right up there with hunger, thirst, safety and the need to breathe. Without a doubt, it is one of our most powerful instincts. (Don't be fooled by the fact that many people repress its superficial manifestations.) If you can tap into another person's instincts you are half way there.

By far, the most important qualification to being beautiful is for you to honestly believe it to be true. Unfortunatley, most people have gained a posture of insecurity. They have little positive sense of themselves except what they see reflected by others. If you are like this then the best you will ever do is *look* sexy. You will never *be* sexy.

If you want to be sexy do the following:

- exercise regularly — never go more than two days without exercising
- have a healthy diet
- stop smoking
- get enough sleep

- smile
- show an interest in those you want to attract

Not only will you look and feel better, but you will feel good about yourself. And you will have sex appeal.

But, of course, there is more to being sexy. Our popular culture holds that there are certain archetypes of both male and female sexuality and that the closer one comes to projecting an image that is identical to one of these templates, the more sexy one is. This is especially so for women. For thousands of years, people have been senselessly rushing around trying to make curly hair straight, straight hair curly, to make light skin dark and dark skin light. And so on.

The current set of ideal sex characteristics is, I believe, of use mainly to the Group, if only from the point of view of the cosmetics and fashion industries. This is not to deny that our sexual displays have a basis in meaningful unconscious motivations. However, if *you* want to be sexy, then concentrate on what is attractive to an Individual, not what is held to be attractive by a Group.

You will be most sexy to someone if you demonstrate sincere interest and availability (which does not imply promiscuity). For this to work, you yourself must be genuinely interested in sex.

Having discussed how you can change yourself to help in your search for intimacy, let us turn our attention to the object of your search : your expectations. I mentioned above that many people are looking for a perfect mate. Let me tell you outright: there is no such thing. It is sad to see so many poeple who keep themselves lonely because they insist on perfection. Perfect intimate love does not happen at first sight.

The chances of your happening to meet a man/woman who is everything you want are remote. Besides, are you sure that you would even recognize perfection? If you are in your early twenties or younger then you hardly even know what you want. It's silly to look for Mr./Ms. Right. Even as you get older, the knowledge about who would make a good partner for you comes slowly, if at all.

When it comes to expectations exercise your judgment. Strike a balance between not being too picky, and not settling for less than you can be happy with. The only way to develop judgment is to experience intimacy with different people and then think about your experience. It is a sobering thought to realize that many people invest less intelligence and judgement into choosing a mate than into choosing a new car.

If you are to be successful in finding intimacy then you must have an understanding, not only of the personal factors involved, but also of the process of selection in which we all participate.

Basically, the selection process is poor. What success it does have it owes to its vastness and to the determination of its participants.

You can understand what happens when you meet another person if you understand that each such meeting is governed by four factors. The first is your personality, which has already been discussed at length.

The second factor, which was alluded to in the discussion on sex appeal, is the availability of the other person. But here I refer not only to sex, but to the establishing of other intimate bonds. There are many people who potentially would be interested in you as a mate but unfortunately (for you) they are already part of a Couple. This suggests that gatherings of single people would be a good place to meet others.

Just as your personality is important in a meeting, so is that of the other person. Bear in mind that a stranger is indeed strange to you. You have no idea what he/she is feeling. Fear? Openness? Horniness[3]? Be prepared to accept the fact that you have no control over the personalities of other people. Looks can be deceiving, but don't become cynical. If Babe Ruth had quit when he first struck out he never would have made it to the Hall of Fame.

This brings us to the fourth factor involved in meeting someone: the current situation of the other person. Stop and think. There may be nothing wrong with you but the other person may not be receptive at this time. He may have a headache. She may be having menstrual discomfort. Someone may like you but may already be part of a Couple. Perhaps, by some bizarre coincidence, you remind someone of their Aunt Rifka. If someone is not interested in you do not take it as an indictment of your lack of worth as a human being. Simply move on to someone who is prepared to appreciate you.

So in spite of all these variables, most of which are beyond your control, how can you make the selection process work for you? What you must do is to spend your time where it will produce the most return. If you are looking for intimacy, don't waste energy on people who are not likely to want to be intimate with you, or on people with whom you really don't want to be intimate. If the shoe doesn't fit, don't wear it!

Learn the skill of feeling out another person. It takes practice and you must be both assertive and gentle. In their second year, medical students are taught the skills of interviewing. Don't leave these talents in the hospital. The best way to get to know someone is by asking those open-ended questions that your clinical psychiatry teachers are always talking about. There is a lot in common between taking a case history and a seduction. In general, consider another person to be frightened until proven otherwise.

The last question that I will address is usually the first one asked — namely, where should a person go to meet someone with whom they could potentially form a Couple?

Approach the problem by considering your general preferences. You may want to consider sex, age, race, religion, intelligence, sexual availability. Then try to answer the question, where are these kinds of people to be found? This is not always easy to answer. For example, two questions that classically seem to be unsolvable are: "Where can I find young, intelligent men who *are not* primarily interested in sex?" and "Where can I find young, intelligent women who *are* primarily interested in sex?"

When you are deciding on your preferences you should be careful not to limit yourself to an unreasonably narrow set. If you are young, then realize that you may have only a slight understanding of what is best for you. The best thing that

you can do for yourself is to experience, experience, experience. And if you are older, try to appreciate if you have unconsciously come to be too set in your ways; perhaps you would enjoy someone out of the ordinary.

I believe that places where singles gather are a good bet. After all, people are there to meet other people. If you think about what I have discussed in this essay, it will help you to understand what is happening in singles' bars and other such places. And to understand is an enormous advantage.

In general, do not depend on or hold out for love at first sight. If you question people as to where they met their intimate friends you will find two situations described again and again. They are:

— when two people have a chance to get to know one another over a period of time and *then* become intimate; for example, doctors and nurses.
— when two people become intimate and *then* get to know one another over a period of time; for example, doctors and nurses.

When I first started working on this essay, I decided that I would interview people who were good at meeting and attracting others. My idea was to compile a collection of advice on what works.

But it didn't work out that way.

The people who seemed to know what they were doing didn't talk about sexy clothes, or opening lines, or which singles' bars were best. Rather they spoke of personality and understanding; of being aware of what was happening around you.

I have come to learn that there is no sure-fire recipe for finding intimacy — people are not that simple. But I firmly believe that if you can understand your desires and engage in purposeful effort then you can often get what you want.□

Footnotes

1. By the way — I have it on good authority that this is the list that Santa Claus checks twice to decide who has been naughty and who has been nice.
2. See my essay *Taking Control* in U. of T. Med. Journal, Vol. LX, Number 1, November 1982, pp. 30-31.
3. Author's Note: In this journal we use the real words. That's the sort of people we are.

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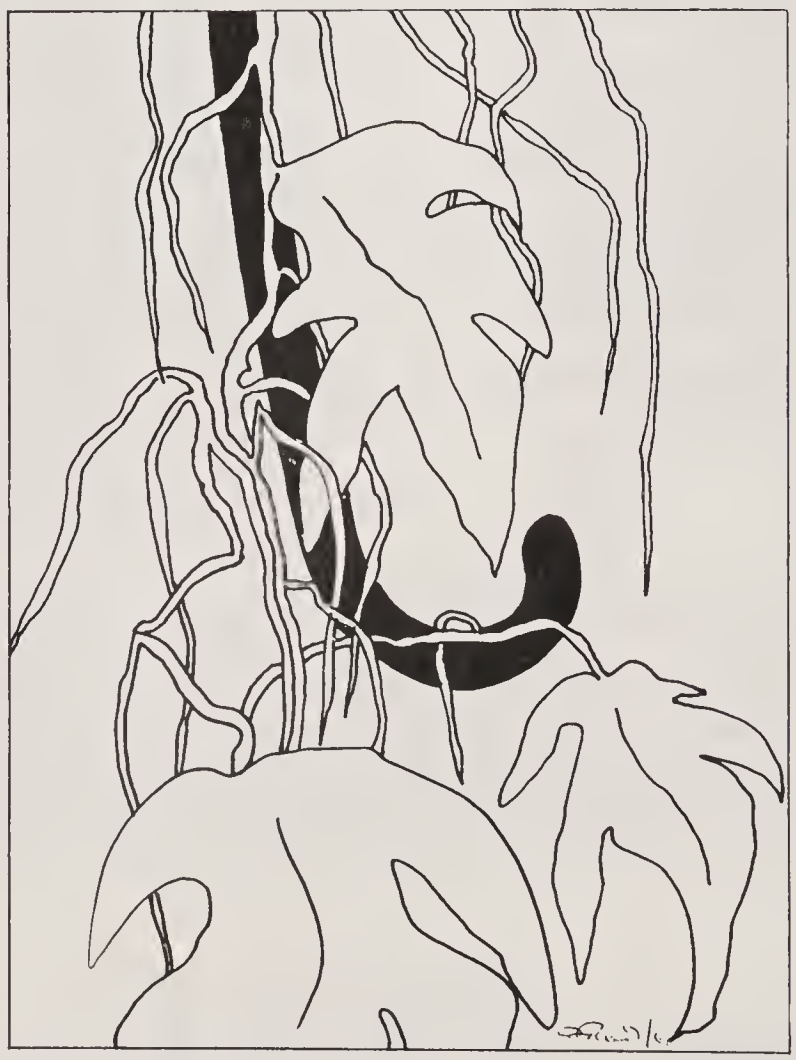
Michael Dan



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Patrons

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ORTHO-NOVUM* 1/50

NORETHINDRONE
AND MESTRANOL
TABLETS

Indication: Conception control.

Contraindications: Thrombophlebitis, thromboembolic disorders, cerebral vascular disease, coronary thrombosis, or a history of these conditions; significant liver dysfunction or disease; history of cholestatic jaundice; known or suspected malignancy of the breast or genital tract, or history of these conditions; known or suspected estrogen-dependent neoplasia; undiagnosed abnormal vaginal bleeding; known or suspected pregnancy; during the period a mother is breast-feeding an infant; any ocular lesion associated with ophthalmic vascular disease such as partial or complete loss of vision, defect in visual fields or diplopia, classical migraine.

Warnings: Discontinue medication at the earliest manifestations of: A. Thromboembolic disorders. B. Visual disturbances including; (i) gradual or sudden, partial or complete loss of vision; (ii) proptosis or diplopia; (iii) onset or aggravation of migraine; (iv) papilledema; (v) opthalmic vascular lesions. C. Oevelopment of headache which is recurrent; persistent or severe and undiagnosed. O. Psychiatric disturbances. Rule out pregnancy in patients who have missed a menstrual period. Patients with epilepsy, diabetes mellitus, asthma and cardiac or renal dysfunction require careful observation. In women with predisposing factors for cardiovascular disease, oral contraceptives have been reported as an additional risk. After the age of 40 years, for purposes of fertility control, oral contraceptives should be considered only in exceptional circumstances, and when the risk/benefit ratio has been carefully weighed by both the physician and the patient.

Precautions: Before use, take a thorough history, and perform a thorough physical examination including a blood pressure determination and examination of breasts, liver and pelvic organs. A Pap Smear should be taken. First follow-up examination is at 6 months, and at least yearly thereafter, including all tests initially performed. Women with a history of jaundice should be prescribed oral contraceptives under close observation. If there is a history of cholestatic jaundice, especially during pregnancy, other methods of contraception should be prescribed. The development of severe generalized pruritus or icterus requires that the medication be withdrawn until the problem is resolved. If jaundice is cholestatic in type, do not resume oral contraceptive administration. Changes in composition of bile and the appearance of cholesterol gallstones have been reported in women taking oral contraceptives. Hepatic neoplasms and nodular hyperplasias or hamartomas have been reported in oral contraceptive users. Although these tumors are uncommon, they have caused fatal intra-abdominal hemorrhage and should be considered in women presenting with acute abdominal pain, an abdominal mass or evidence of intra-abdominal bleeding. Patients with essential hypertension may be prescribed oral contraceptives under close supervision. If a significant blood pressure elevation in previously normotensive or hypertensive subjects occurs at any time, cessation of medication is indicated. Oiabetic patients or those with a family history of diabetes should be observed closely. Latent diabetics who can be kept under close supervision may be prescribed oral contraceptives. Young patients with overt diabetes whose disease is of recent origin, well-controlled and not associated with hypertension or other signs of vascular disease should be closely observed. In metabolic or endocrine diseases and when calcium and phosphorus metabolism is abnormal, careful clinical evaluation should precede medication. The risk of complications due to adrenocortical insufficiency appears to be minimal with oral contraceptive therapy. Estrogen-progestogen combinations may cause an increase in plasma lipoproteins and should be administered with caution to women known to have preexistent hyperlipoproteinemia. Use special judgement in prescribing oral contraceptives to women with fibrocystic breast disease. Persistent irregular vaginal bleeding requires investigation to exclude the possibility of pregnancy or neoplasm. Observe patients with fibroids carefully. Sudden enlargement, pain or tenderness of uterine fibroids require discontinuation of medication. Assess adolescent patients for adequate skeletal development prior to medication, since oral contraceptives may accelerate epiphyseal closure. Oral contraceptive therapy may mask the onset of the climacteric. In general, women in the later reproductive years gradually assume an increasing risk of circulatory and metabolic complications, especially at age 35 to 40. Shorter duration of oral contraceptive use, and avoidance of cigarette smoking is advisable. Patients with a history of emotional disturbances, especially the depressive type, are more prone to have a recurrence. In cases of serious recurrence, the medication should be discontinued in favour of a non-hormonal method of contraception for a trial period to determine if the symptom is therapy related. The following laboratory tests should not be considered reliable unless oral contraceptive therapy has been discontinued for 2 to 4 months: liver function tests; coagulation tests; thyroid function tests; adrenocortical function tests; reproductive endocrine profile changes; and other tests involving phospholipids, triglycerides, serum folate, tryptophan metabolism, and serum glucose. Advise pathologists of oral contraceptive therapy when specimens are submitted for examination. After discontinuing oral contraceptives, the patient should use an alternate non-hormonal method of conception control and await the resumption of normal ovulatory cycles before attempting to become pregnant. Women with a history of oligomenorrhea or secondary amenorrhea or women with irregular cycles may remain anovulatory or become amenorrheic following estrogen-progestogen combination therapy. Amenorrhea, especially if associated with breast secretion that continues for 6 months or more after withdrawal, warrants a careful assessment of hypothalamic-pituitary function. Fetal abnormalities have occured in the offspring of women who have taken progestogens and/or estrogens during pregnancy. The safety of oral contraceptives in pregnancy has not been demonstrated. Rule out pregnancy before initiating or continuing the contraceptive regimen. Always consider pregnancy if withdrawal bleeding does not occur. Retrospective studies have reported an increased risk of post-surgery thromboembolic complication in oral contraceptive users. Therapy should be discontinued at least 1 month prior to elective surgery and not resumed until at least 2 weeks after hospital discharge following surgery associated with an increased risk of thromboembolism. A reduced efficacy and increased incidence of breakthrough bleeding have been reported in oral contraceptive users treated concomitantly with barbiturates, rifampicin, phenylbutazone, phenytoin or ampicillin. Protracted vomiting and/or diarrhea may decrease the absorption and effectiveness of oral contraceptives. Should these occur, an additional method of contraception should be recommended for the remainder of the cycle.

An increased risk of the following seriously adverse reactions has been associated with the use of oral contraceptives; thrombophlebitis; pulmonary embolism; mesenteric thrombosis; neuro-ocular lesions; myocardial infarction; cerebral thrombosis; cerebral hemorrhage; hypertension; benign hepatic tumors; gall bladder disease, congenital anomalies. The following adverse reactions have also been reported in patients receiving oral contraceptives: nausea and vomiting; gastrointestinal symptoms; breakthrough bleeding and spotting; change in menstrual flow; dysmenorrhea; amenorrhea; temporary infertility; edema; chloasma; melasma; breast changes; weight change; endocervical hyperplasias; diminution in lactation when given immediately postpartum; cholestatic jaundice; migraine; increased size of uterine leiomyomata; rash; mental depression; reduced carbohydrate tolerance; vaginal candidiasis; premenstrual-like syndrome; intolerance to contact lens; change in corneal curvature; cataracts; libido change; chorea; appetite change; cystitis-like syndrome; headache; nervousness; dizziness; hirsutism; loss of scalp hair; erythema multiforme; erythema nodosum; hemorrhagic eruption; vaginitis; porphyria; impaired renal function.

Dosage: - 21 day regimen: 1 tablet daily for 21 days, followed by 7 days without medication.
Cyclic administration.

- 28 day regimen: 1 tablet daily for 21 days, followed by 7 inert green tablets.
Continuous administration.

Supplied: ORTHO 1/35: each peach tablet engraved on both sides with "ORTHO 1" contains 1.0 mg norethindrone and 35 mcg ethinyl estradiol. ORTHO-NOVUM 1/50: each yellow tablet engraved on both sides with "ORTHO 1" contains 1.0 mg norethindrone and 50 mcg mestranol. In the 28-day regimens the green tablets contain inert ingredients. Available in a 21-day or 28-day OIALPAK* Tablet Oispenser.

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4. Oata on file, Ortho Pharmaceutical (Canada) Ltd.

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NORETHINDRONE AND
ETHINYL ESTRADIOL
TABLETS

The Medical Alumni Association is the bridge between the graduates and the Faculty of Medicine, University of Toronto.

During your undergraduate years, the Association was involved with providing financial assistance (scholarships, bursaries, travel grants, fellowships, loans) as well as sponsoring programs that were of particular interest - General Practice Panel, Arts and Letters Committee, Undergraduate Affairs, Graduation Banquet, etc. Now that you have graduated, the Association is still able to offer financial assistance in form of bursaries and loans; as well as being your representative at the Faculty and University level.

At the Faculty level, there are two representatives on the Faculty Council, a representative on the Admissions Committee, and the Chairman of the Student Aid Committee is a representative on the Student Awards Committee.

At the University level, the Association has two representatives on the University of Toronto Alumni Association, two representatives on the College of Electors, and a representative on the Varsity Fund Executive Committee.

We are also represented on various Search Committees when Department Chairmen and the Dean of Medicine are being sought.

During the past three years the Association has been involved in collecting funds on behalf of the Faculty of Medicine (Update) to support and expand a Continuing Education program. This program will become increasingly more important if the College of Physicians and Surgeons decides to incorporate the need to re-license physicians every five years. Government funding has been decreased for existing programs, and there is no provision for the incorporation of new ones.

The Association is also involved in providing some impetus to five year reunions. Two letters will be sent free of charge, for each class celebrating their reunion. Every attempt is made to keep an up-to-date address list of all our graduates. Please remember to notify YOUR Medical Alumni Association of any address change.

The Association is governed by graduates who give their time and talents voluntarily. There is one full time employee. Donations given for Student Aid are used entirely for that purpose; and the donations given on behalf of the Faculty of Medicine Update are turned over to the Faculty without any administrative charge. Trust funds are administered, without charge, following the direction of the donor.

If you are interested in serving on the Executive Committee, or would like to have your opinions voiced to the proper authorities, please do not hesitate to contact YOUR Medical Alumni Association.

Above all, consider it an honour to be invited to attend the Medical Alumni Association and to help those who are coming after you.

MEDICAL ALUMNI ASSOCIATION